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THE EDUCATION OF EXCEPTIONAL CHILDREN

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

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Vol. XXIII, No. 5

December 1953

The Education of Exceptional Children

Reviews the literature in this area for the nine-year period since the issuance of Vol. XIV, No. 3, June 1944.

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CHAPTER XXVII

THE JOURNEY TO PARIS

and I had to go to Paris to get my money.

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This issue of the REVIEW was prepared by a Joint Committee on the Education of Exceptional Children in cooperation with the Research Committee of the International Council for Exceptional Children.

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FOREWORD

NINE years have elapsed since the REVIEW OF EDUCATIONAL RESEARCH published its last issue on "The Education of Exceptional Children and Minority Groups" in June 1944. One other issue of the REVIEW had appeared on the same topic in June 1941.

Interest in and provision for exceptional children has expanded at a rapid rate during the last nine years. The amount of literature accumulating in each of the areas has been enormous. To keep within the length of this issue, authors were forced to exercise great selectivity in the references reviewed.

This REVIEW, for the first time, eliminates the sections on minority groups which previously were included in chapters on "Negroes," "Bilingual Children," and "Indians." It deals solely with the major areas of research pertaining to exceptional children. Altho the June 1941 REVIEW on exceptional children included one chapter on "The Visually Handicapped, the Delicate, and the Crippled," the June 1944 issue of the REVIEW omitted reference to the visually handicapped and the crippled. The first five chapters of this review cover the literature on various types of exceptional children for a nine-year period. The final two chapters treat of research pertaining to the visually handicapped and the orthopedically handicapped for the 12-year period from June 1941 to June 1953.

The Chairman wishes to express his gratitude to the members of the Committee and to the contributors for their cooperation in the organization of the issue and in the preparation of the chapters. The Chairman is also indebted to Miss Bluma B. Weiner, graduate assistant, for editorial assistance.

SAMUEL A. KIRK, *Chairman*
*Joint Committee on the Education
of Exceptional Children*

CHAPTER I

General Problems and Administration of Programs for Exceptional Children

LEO F. CAIN

THE expansion of educational programs for exceptional children over the nation during the past nine years has carried with it several crucial concerns. The large number of children currently enrolled in special programs, while still small in proportion to the total need, has created a teacher-supervisor-administrator shortage which has necessitated expensive and broad expansion of teacher-training facilities. The strain on housing, already acute, has been further increased by the generally accepted needs of exceptional children.

Enabling legislation sometimes preceded the development of adequate programs and personnel. Always there has been the need for sound analysis and evaluation of programs. In this relatively new area the goals have been well defined, but the paths to achievement have been much less precise. Much of the research of the past nine years has been directed toward the immediate need for direction at the classroom level. It is in retrospect that concerned leaders have paused and questioned the direction of the programs on the administrative level.

The neglected area of administration in special education research-studies, the presentation of accomplished studies, and the need and direction for future work are the particular concern of this chapter. The chapter will touch many of the areas of special education in which work has been done but will be confined to the factors significant from an administrative standpoint.

Cain (4) coordinated the study in California which set out to determine the existing facilities, the need for the nine years subsequent to 1951, and the probability of meeting the demand. It was conservatively estimated that only 50 to 60 percent of the need would be filled by 1960. This study, undertaken at the request of the State Department of Education, recommended specific adjustments thruout the state training institutions and supported the regional planning suggested by Cruickshank (8) and Featherstone (13). Kelly (26) and Parker (40) described facilities at Columbia and Illinois State Normal University respectively for the training of teachers of exceptional children.

In 1952 the periodical *Exceptional Children* (12) announced the initiation of a joint study by the Association for the Aid of Crippled Children and the U.S. Office of Education. This study is to probe teacher certification and standards of teacher education and to determine the qualifications of adequate teachers of exceptional children.

Principles and Goals

The establishment of a guide for the successful administration and supervision of special services was reported by Graham and Engel (16). They emphasized parent-school communication with an effort to obtain a cooperative effort in the education of the exceptional child. Based on the authors' own experience and earlier studies and reports, this offered a practical and valuable outline of attack to these frequently difficult problems.

Harms (19), as editor of an extensive handbook of guidance, presented some thinking on different areas of handicapped children. Specifically in the area of the physically handicapped, he urged the value of vocational adjustment as an aim in educational preparation.

The needs of the gifted child, a generally neglected area in practicing education, were briefly stated by Witty (53) with the conclusion that well-planned assistance and specialized help may be necessary to develop these children to full potential.

In 1952, Mackie (30) produced a leaflet for the U. S. Office of Education intended to clarify some of the emerging problems in existing programs and point the direction for the future. This pamphlet clearly showed that some of the original aims of special education remain as unaccomplished purposes or need further pushing into the field of practice. The five problems delineated are: (a) extension of program to wider age group, (b) closer home-school relations, (c) more teachers, (d) more adequate financial appropriations, and (e) closer teamwork among related agencies.

The fact that these goals remain with us after many years of effort is an indication of how far we have to go. Having accomplished much coverage, we see how great is the remaining need. Mackie's report (30) stated that 15 percent of those needing special services were receiving that service in 1952. By comparison, in a similar report from the U.S. Office of Education in 1944, Martens (31) stated that 10 percent were being served. The biennial survey published by the U.S. Office of Education (49) offers further data on program growth.

Legislation

The status of legislation in the United States was well presented by Martens and others in 1949 (34) and supplemented in 1950 (33). In the pamphlet issued in 1949, (34) Martens presented a 10-point bill of rights for exceptional children and a basic structure for state legislation. This offering was a valuable yardstick for existing legislative programs and a guide for proposed programs. To these might be added the warning in Mackie's report (30) of providing safeguards to prevent curtailment of programs in periods of close money.

Increasing costs of education were considered by Tenny (48), who stated that public relations remains a key to continued welfare of special education. He further proposed that due thought be given to simplification of

reporting technics from local to state levels. This would be valuable in encouraging activation and continuation of programs.

Operation of Programs

The efforts to meet the difficulties of developing programs in the Great Plains region of the United States were reported in *Exceptional Children* (11). Two outcomes of this conference were the emphasis on the need for the classroom teacher to be made aware of the various deviant children, and the acceptance of the local school for the welfare of all the exceptional children in the district.

A group of reports at the administrative level on programs thruout the nation appeared in the periodicals of the last nine years. Altho these were quite specific and more properly belong in the chapters related to specific areas of the exceptional child, some of the difficulties brought out are worthy of mention here. The provision for mentally retarded in rural areas was discussed by Stevens and Stevens (47), who proposed that removing the child from his probable future environment places undue strain on him. This problem could be more naturally and satisfactorily met by providing for him locally within the rural school. Williams (50) detailed how Wisconsin met this problem in 1948. Kelly (25) presented the program for the mentally retarded on the junior high-school level and followed with some conclusions for successful administration of such a program.

De Prospo (9) reported the application of guidance and placement to the program for the mentally retarded in New York, N.Y. Maxfield (35) considered the problem of meeting the needs of the mentally retarded and visually handicapped child, outlined a program, and suggested some experiments of probable value for future programs. Garrison (14) discussed the administrative problems in a speech and hearing program.

An ongoing research study on the gifted by Hildreth (22) was reported in her book published in 1952. In the nature of a progress report, the program was outlined, goals set forth, and measured progress presented and compared with a control group. Not only was this an enlightening study but some of the implications which grew from it give valuable direction for future research with gifted children.

Mosso (36) described an experiment for high-school students of superior ability. This experiment offered suggestions for the education of such a group of students.

Problems in Teacher Training

The history of the development and expansion of teacher-training programs was outlined by De Ridder (10) in 1950. He credited the public schools with recognizing the need and demanding trained people. He concluded with an optimistic note for the future. Kelly (26) explored the history of teacher training in special education and pointed out that residential

institutions had pioneered in this work. She stated that the field of teaching was uninviting in early years because of confusion in classification of children, lack of standardization of school organization, and inadequacy of technics for teaching the exceptional child.

Cain (5) briefly noted in general terms what was needed in the attitude of a successful teacher of the handicapped, stressing a good mental hygiene approach. This concept is also recommended in the Forty-Seventh Yearbook of the National Society for the Study of Education (39). Baruch's experiment (3) offered a useful technic for developing this in teachers of normal children and reported a significant degree of success.

The recognition of the problem of loss of teachers from special education was stated by Featherstone (13), who suggested the need of more guidance during teacher training. In an effort to identify motivation of prospective teachers of the exceptional, Lord and Wallace (29) conducted a study to determine reasons for entering the special education field. They suggested that the most common reasons as established by this study might well be utilized in guidance of teachers prior to beginning in the field.

A growing and acute shortage of administrative and supervisory personnel and of nationwide opportunities for teacher training was noted by a joint study of the National Society for Crippled Children and the U. S. Office of Education (37). The Twenty-Sixth Yearbook of the American Association of School Administrators (1) emphasized the crucial character of this shortage by placing responsibility for development of special education programs squarely in the hands of the administrator.

Cruickshank (8) noted the teacher shortage and proposed regional planning at the college and university level. He pointed out the real challenge to college administrators inherent in this proposal and suggested that the welfare of the entire program might rest on their meeting this challenge. Featherstone (13) made a similar approach when he stated that from a pooling of facilities by institutions of higher learning, a coordinated program could emerge which would offer greater potential in meeting the need. In California, Cain's study (4) reinforced this concept by pointing up the existing discrepancy between the need for teachers and the available training facilities.

The joint survey by the National Society for Crippled Children and the U. S. Office of Education (37) presented the national picture for teacher-training facilities in 1949, describing state-by-state offerings of colleges and universities in special education. This survey noted a 73 percent increase in course offerings since 1936.

Evaluation of Techniques

A series of articles, reports, and studies evaluated methods in current operation. Hayes (20) critically surveyed supervision and administration. Ingram (23) and Rosenzweig and McAllister (43) examined some trends in special education. Martens (32) listed some developing needs for educa-

tion of the exceptional and proposed exploration of techniques for development of particular talents for social advancement. In specialized areas, Stevens (46) looked carefully at methods of organization for mentally deficient adolescents. Patterson (41) examined a prolonged pre-academic program. Carlson (6) appraised a controlled study on the gifted in relation to homogeneous grouping and its effect on mental hygiene. Wilson (51) and Witty (52) both examined the nationwide provisions for gifted children and concluded that much accomplished and available research was not being utilized in the operation of programs.

Needed Research

It has been most significant in the preparation of this chapter that research in special education is a slightly cultivated field, alarming in its lack of coordination and notable in its waning volume. In a comprehensive appraisal, Kirk (27) pointed to the fact that most available work has been the byproduct of studies in the disciplines of medicine, biology, psychology, and sociology; that very little research has emerged from within the field itself.

A later survey by Cruikshank (7) supporting this point emphasized that while the centers of acknowledged leadership in the field of mental deficiency were decreasing in research output, no institutions to replace them were appearing. His conclusion was that the American Association for Mental Deficiency or some similar national organization should accept the challenge to stimulate the interests and assist in training the competent researchers necessary for meeting this shortage.

An example of specific effort toward more extensive research was announced by Kirk and Spalding (28) on the program of the University of Illinois Institute for Research in Exceptional Children. The organizational plan, the proposed work, and the inclusion of the aim to train research workers in this area promise a most valuable future.

There was no lack of statements of goals or specific purposes in research, but rather in the actual accomplishment of it. Kirk (27) presented a detailed area-by-area analysis of studies needed in the whole field of special education.

In 1947 Haitema (18) discussed a series of needed investigations. Since Haitema's work was particularly significant to problems of administration and supervision, it is reviewed here in some detail. The author first indicated some of the general shortcomings and needs as follows: (a) Developing administrative research to determine proper balance between sentimentality and genuine sympathy for the handicapped. (b) Determining and meeting some of the specious reasons for administrative refusal to accept special services. The need to offer guaranteed educational services to the exceptional is implicit in the widespread expansion of services, but a scientifically determined proof of worth would be invaluable in overcoming resistance to program growth. (c) Studying such controversial issues as

segregation versus nonsegregation, and day schools versus residential schools needs the objective touch of research-study for valid resolution. (d) Examining the inconsistencies in state policies for exceptional children. For example, the usual separation of funds between those needed for normal children and exceptional children should be evaluated with supporting data. The mandatory attendance of normal children should be compared with the vacillating policies regarding exceptional children, as well as the mandatory and permissive relation of actual provision for normal and exceptional in the schools. The inequities of fund appropriations among the exceptional children should be studied, such as disproportionate financial help being given the physically handicapped as compared with that given the emotionally disturbed. All these need the validation of investigation and preparation of substantiative evidence.

As a second broad area of needed study Haitema looked critically at state patterns and proposed some concepts whose implementation would be subject to research: (a) Education is a state function, the federal purpose being accepted as enabling and stimulating rather than administering. (b) State financial obligations should be legislated so that special education would be integrated with general education funds and not subject to random economy moves. (c) States should set up standards for teacher training, pupil selection, and housing, and should function in a consultative capacity. (d) Institutionalization versus the utilization of local facilities should be subjected to experimentation and review.

Considering a third area, the local administration, Haitema proposed that research evaluation be used to measure the program against his guideline of requirements for good administration. The good school will (a) identify the exceptional, (b) be able to offer initial service thru local agencies of education and then by encouragement and assistance of other community organizations, (c) provide proper housing and facilities, (d) offer programs based on needs of children rather than administrative convenience, and (e) provide parent and adult education.

Bibliographies and General Source Material

Some publications noted in the compilation of this chapter were of sufficient general value to be included and are touched briefly here.

The National Society for the Study of Education devoted Part II of the Forty-Ninth Yearbook to the education of exceptional children (38). Baker (2) brought out a revision of his text, which brings up to date this comprehensive introductory book. Garrison (15) also published a revision of his 1943 edition. Heck (21) in 1953 also revised his 1940 book on exceptional children. These are valuable source books for the introduction to exceptional children.

Robinson and Ingram (42) published from 1944 to 1947 a series of selected bibliographies from the literature in special education. This was continued in 1950 by Haggard, Nelson, and Ingram (17), and in 1952 by

Ingram and Kvaraceus (24). These were annotated by the compilers and included about 100 titles each.

In 1952 Rothstein (44) prepared a classified bibliography on the guidance and clinical diagnosis of the handicapped. Of more specialized interest was the bibliography by the staff of San Francisco State College (45) on the education of the mentally retarded. Bibliographical material has also been made available by the U.S. Office of Education of the Federal Security Agency (now the Department of Health, Education, and Welfare), and the National Society for Crippled Children and Adults, with offices at 11 South La Salle Street, Chicago, 3. The International Council for Exceptional Children and the NEA Research Division have jointly produced periodic bibliographies that are available from the National Education Association.

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CHAPTER II

The Mentally Retarded

SAMUEL A. KIRK and OLIVER P. KOLSTOE

DURING the nine years since this REVIEW last treated the literature on the mentally retarded, there has been an increased emphasis on the care, education, and supervision of such children. This emphasis seems to have been stimulated, at least in part, by the shortage of manpower in industry and the consequent use of the handicapped (including the mentally retarded) in many jobs. An added impetus has come from the rapid growth of parent organizations and their requests for increased provisions for these children.

A number of significant books dealing with various aspects of mental retardation have been published. None of the books is a complete treatment of all major aspects of the condition; rather each author has chosen to treat systematically only one area. Benda (7, 8) and Penrose (96) have published major books on the medical and biological aspects of mental deficiency. Psychological aspects and problems have been explored in books by Sarason (108) and Wallin (134). A book written for teachers and dealing with educational programs for mentally retarded children was contributed by Kirk and Johnson (74). Strauss and Lehtinen (124) have summarized their research and special teaching methods in a book focused on the problems of brain-injured children.

The organization of parents who have mentally deficient children has given impetus to publications urging better provisions for these children in communities and in institutions. Books and pamphlets written by both lay and professional authors and directed to a parent audience include those by Buck (17), Frank (39), Levinson (77), Lewis and others (78), Loewy (79), and Rogers (103).

Over 1000 articles, pamphlets, and monographs have been published in this area during the period reviewed. Most of these publications were not of a research nature or were concerned with medical aspects. A summary of the more important nonmedical research literature is herein discussed and is organized under the headings of (a) definitions and classifications, (b) psychometric studies, (c) projective studies, (d) sociometric studies, (e) social and vocational adjustment, (f) effects of educational programs, (g) organization and administration, (h) curriculums, (i) parent education, and (j) need for research.

Definitions and Classification

A review of the literature reveals many contradictions in research results which are due primarily to lack of uniformity in definitions and classifications.

No standardization of terms has yet been achieved in the field, but attempts at standardization have been reflected by the proposed terminologies of many different workers. The terms feeble-mindedness, mental deficiency, idiots, imbeciles, morons, and the like are considered by parents and professionals as stigmatizing. The term "retarded" has been substituted for mentally deficient or feeble-minded in many of the articles. The American Psychiatric Association (4) proposed using terms such as mild, moderate, and severe instead of the former terms of borderline, moron, and imbecile.

This interest in terminology has given rise to attempts at more functional classifications by many writers. Kanner (68) has attempted to classify the different kinds of mental retardation into "absolute," "relative," and "apparent." Kirk and Johnson (74) used the terms "mentally deficient," "mentally handicapped," and "slow learner" to denote various levels of educability. Doll (35) emphasized the endogenous-exogenous typology. French and others (43) attempted to differentiate between the "familial" and "nonfamilial."

Psychometric Studies

During the nine years reviewed in this survey there was a tendency for psychologists to rely less on an IQ score alone and more on the pattern analysis of tests, special tests, or interpretation of subtests. Coextending with this trend, differential diagnosis of the mentally retarded has received increasing attention. The majority of studies were concerned with (a) the significance of responses on items and subtests, (b) difference in performance of the same individual on different tests, and (c) special disabilities associated with brain injuries.

Item Analysis. The usual method of item analysis is to compare the performance on test items of normal and defective children of the same mental age. An analysis of the *Stanford-Binet* performance of 441 defectives was compared with Terman and Merrill's standardization group by Thompson and Magaret (127). They found rote memory items harder for defectives than for normals. They also found that the hypothesis, that items involving past experience or rigidity favored the mentally defective group, was not sustained. In a follow-up study Magaret and Thompson (84) found that the defectives surpassed the superior children on items involving manual manipulation and the use of test materials.

The instructional procedure with the mentally retarded is sometimes contingent upon the cognitive process. Research workers have been interested in the different hierarchies of conceptualization in the mentally retarded as compared to normals. To obtain information on this process Stacey and Markin (121) and Stacey and Portnoy (122) in two separate studies found that defective children gave more functional definitions on the vocabulary and similarities subtests of the *Wechsler Intelligence Scale* than did the borderline individuals. Sloan and Cutts (118) in one study

concluded that for the mental defective, tests involving abstraction are more difficult than tests involving concreteness. In general, the studies suggest that higher-grade defectives use descriptive concepts rather than categorical or abstract ones.

Comparison of Tests. Numerous studies have been made comparing test results on the same individual in an attempt to understand better the meaning of discrepancies in test performance. Needham (90) administered the *Goldstein-Scheerer Cube Test* to two groups of mental defectives matched for mental age on the Binet. One group scored 2 years and 10 months lower on the Goodenough than on the Binet. The other group scored less than 14 months lower on the Goodenough. Needham found that the group that did poorly on the Goodenough also did poorly on the Cube Test.

Comparative studies of verbal and nonverbal test results have occupied the attention of some workers. Arthur (5) administered the Binet and Arthur tests to 60 mental defectives with no special handicap or disabilities. She found no difference between verbal and nonverbal abilities.

Roberts (101) tested 36 patients in an institution for mental defectives with the *Stanford-Binet*, *Arthur*, and *Wechsler-Bellevue Intelligence tests*. For the 13 patients above 20 years of age, there was a statistically reliable difference of 16.3 points between the *Arthur performance* quotient and their *Wechsler-Bellevue* nonverbal IQ's in favor of the latter. No significant difference was found for the scores of 23 patients below 20 years of age.

Bensberg and Sloan (10) administered the *Wechsler-Bellevue*, *Arthur Performance*, and *Stanford-Binet* tests to older patients of 30 to 55 years. They compared the IQ's with those obtained on the 1916 Binet, administered to the patients when they were 15 to 25 years of age. They found a decline with age except on the Wechsler IQ's. They attributed the latter to an artifact of the test resulting from a biased standardization sample, at least with the low-intelligence group. Thompson (126) found both normals and defectives showed mental ability decline with increasing age, but that the defective group "reached bottom" sooner than the normal. This would tend to substantiate the findings of Bensberg and Sloan. In a study by Alderdice and Butler (3) it was concluded that the Wechsler diagnostic signs for mental deficiency are not sufficiently reliable for use with higher-grade defectives. They also concluded from a factor analysis that all of the performance tests are measuring a common factor independent of that measured by the *Binet*.

The standardization of the *Wechsler Intelligence Scale for Children (WISC)* has resulted in its comparison with other tests. Vanderhost, Sloan, and Bensberg (132) administered *Wechsler-Bellevue Scale I* and the *WISC* to mental defectives whose Binet IQ was known and whose ages were 11 to 16. Agreement was found between the performance sections of the two Wechsler scales, and between the verbal on the Wechsler scales and the Binet. Performance scores were higher than the verbal. In another study, Sloan and Schneider (119) administered the *Grace Arthur*, *Stanford-Binet*, and *WISC* to the same subjects. Again there was close agreement between

the performance tests of the two scales and between the verbal test of the *WISC* and the *Binet*. Similar results were obtained by Sandercock and Butler (106) and by Stacey and Levin (120).

Brain Injuries. Interest in the psychological disturbances of brain-injured mental defectives is reflected in numerous studies. Strauss and Lehtinen (124) stated that in some mental defectives, brain injuries resulted in three major types of psychological disturbances. These abnormalities were: (a) perceptual disturbances in which the child showed discontinuity and incoherence in following models on perceptual tasks, such as the marble board test; (b) thinking disorders in which the child showed disorganized, uncommon, or peculiar concepts on sorting-tests; and (c) behavior disorders in the form of erratic, uninhibited, uncontrolled, and socially unacceptable behavior. Strauss and Lehtinen organized educational procedures for the correction of these disorders but as yet have not demonstrated their efficacy experimentally.

Shotwell and Laurence (114) compared the performance of brain-injured and nonbrain-injured mental defectives on the *Mosaic Test*. They gave a subjective description of the differences without statistical analysis and concluded that the characteristic pattern for the brain-injured was incoherent and unorganized. Bensberg (9) compared the performance of brain-injured and nonbrain-injured mental defectives on the marble-board test. He found that the marble-board test is a useful tool in differentiating feeble-mindedness caused by brain injury and that of the familial type. He also found that mental age is a factor to be considered in using the marble-board test, since both the familial and brain-injured obtained higher scores with increasing mental age. He felt that norms should be established on the marble-board test before it can become of some use in differential diagnosis.

Hoakley and Frazeur (58) analyzed Binet items on 18 matched pairs of mental defectives when one of the pair was brain-injured. They found slight differences only in the visuo-motor field. Frazeur and Hoakley (40) found no differences in exogenous and endogenous groups on items of the *Arthur Point Scale*. Werner (142) compared endogenous and exogenous children matched for MA and IQ on the Rorschach test. He concluded that the exogenous group showed a lack of integration of the elements into a more comprehensive configuration, a greater degree of responsiveness to sensory stimuli, poor motor control, meticulousness, and rigidity.

In a recent study, Feldman (37) compared endogenous and exogenous mental defectives on the *Bender-Gestalt Test*. He found that both groups, as compared to normals, showed three characteristics: (a) perseveration to simple tasks, (b) failure to complete difficult designs, and (c) failure to overlap figures. Feldman interprets perseveration to inability to shift attention; failure to complete designs to distractability; and failure to overlap figures to a visual defect in figure-ground perception. The brain-injured group showed a significantly greater deficiency in visual-motor functioning than did the familial group. Both groups, however, were

more deficient than normals in all factors. Feldman feels that prediction of behavior, educability, and prognosis by the *Bender-Gestalt Test* may prove to be a more valid criterion than that used by Strauss.

Bijou and Werner (12, 13) found that the brain-injured had a wider range of vocabulary than did matched nonbrain-injured. The brain-injured appeared to be superior quantitatively and qualitatively. The authors contend that these studies indicate better concept-formation in language than was found on grouping- and sorting-tests. They question the latter as poor concept-formation and ascribe the inferior performance to personality factors.

Projective Studies

There has been considerable interest in the diagnosis of the personality of the mentally retarded. This interest stems from the dissatisfaction with diagnoses of children by psychometric methods only. Many have not recognized the underlying personality disturbances which may sometimes simulate mental deficiency. Pseudo-feeble-mindedness has been discussed by Arthur (6), Cassel (19), Guertin (48), Kanner (67), and Safian and Harms (104).

In addition to, and sometimes in place of intelligence tests, projective tests have been used with mental defectives. In using the Rorschach test, Sarason and Sarason (109) compared a group of high-grade mentally defective children who tested on the *Kohs Block Design* 18 months above the Binet mental age with a group who tested on the *Kohs Block Design* 18 months below the Binet mental age. They found that the Kohs-above-Binet group were better adjusted and appeared more stable than the Kohs-below-Binet group as determined by Rorschach responses.

Jolles (64) and Sloan (116) in separate studies administered psychometric and Rorschach tests to groups of higher-grade mentally retarded. The children tested mentally defective on psychometric tests, but some of them tested normal on the Rorschach test. They concluded that mental deficiency of the familial and undifferentiated types may be a symptom of personality disorder rather than an indication of limited mental ability. These conclusions have been criticized by Sarason (108) and Wallin (134). Abel (2) and Font (38) administered Rorschachs to mental defectives. They felt that the test has some merit in ferreting out personality disorders.

Other projective technics have been used with mental defectives. Abel (1), Gothberg (45), Sarason (107), and Slack (115) used the *Thematic Apperception Test*. The results are not consistent, but the authors uncovered exaggerated feelings of aggression, a desire for affection, rebellion against parents, guilt feelings, and other personality reactions. Most of these studies have been made on institutionalized defectives and probably do not represent defectives in communities.

In commenting on the use of the Rorschach with mental defectives, Sarason asserted: "It is interesting to note that the psychological pendulum

seems to have swung markedly. Whereas formerly the IQ was the sole basis for a diagnosis of mental deficiency, the Rorschach seems now to have been given this Herculean task. It may be anticipated that just as the uncritical acceptance of the IQ proved embarrassing to the psychologist, so will the Rorschach be shown to have limitations" (108:248).

Sociometric Studies

A study of friendship selection in a dormitory for mentally retarded girls was made by Hays (52). Using the sociometric technic of one-best-friend choice, he found that the girls tended to choose friends of similar mental level rather than of similar chronological age or IQ. In a study by Johnson (62) of the social status of the mentally retarded in the regular public-school grades, he found that in general the mentally retarded were more isolated and rejected than the borderline or average group. Johnson and Kirk (63) repeated the study in a progressive school system with smaller teacher-pupil ratio and obtained identical results. They concluded that mentally handicapped children in the regular grades are socially segregated even tho they are physically present. This seems to be true in both traditional and progressive school systems.

Social and Vocational Adjustment

Studies on the social and vocational adjustment of the mentally retarded took the form of follow-up investigations. In one follow-up study of the adjustment of 256 morons in a Connecticut community, Kennedy (71) compared their adjustment with 129 nonmorons from the same socio-economic levels. Some of the comparisons that were made were in family background, economic adjustment, antisocial behavior, and social participation. There were many more similarities in adjustment than differences. Altho the morons held unskilled and semiskilled jobs, had more court records and less social participation in community affairs, the author concluded that in general most of them got married, raised families, supported themselves economically, and were not serious problems in the community.

Follow-up studies of parolees from institutions for mental defectives have been continued. The period after 1944 represents a period of manpower shortage and the utilization of all available individuals. Studies during this period would differ from those conducted during the depression.

Hegge (54) followed up graduates of the Wayne County Training School. He found that 88 percent were employed and adjusting in the community. Hartzler (49) followed up the adjustment of 54 girls paroled from the Laurelton State Village after 10 years. Fifty-seven percent were considered adjusted. The factors which led to good or poor adjustment were (a) prior delinquencies, (b) length of time on parole, and (c) the

type of home to which the girl returned. O'Brien (92) followed up 82 parolees from institutions. The majority succeeded in vocational adjustment. The author concluded that they rated highest in "worker satisfaction" and lowest in "societal contribution." Butler (18) followed up 147 defectives paroled from institutions who served in the armed forces and 339 who obtained jobs in war plants. A substantial number showed satisfactory performance.

In a study by McKeon (83) of a sample of graduates of special classes in New England, one-fifth were employed 100 percent of the time since leaving the school, less than 25 percent had ever appeared in court, and most of those who did appear were booked for larceny. Slightly more than 10 percent had spent time in a reform institution. McIntosh (82) followed up 1000 boys graduating from a special school. He found that the majority were successful in useful nonprofessional occupations.

Delp and Lorenz (31) followed up 84 children with IQ's below 50 who were graduates of public-school special classes in Minnesota. They found that about one-half remained at home, about one-fourth were in institutions, and about one-fourth had either died or had moved out of the state. Most of those who remained at home were adjusting and were helpful in the home. Ten (all males) were found to be gainfully employed. Of these 10, two (IQ's 55 and 42) had full-time jobs, three had regular part-time work, and five had occasional jobs.

Some attention has been given to characteristics which facilitate employability of the mentally retarded. Michal-Smith (87) asked institutional directors and industrial personnel directors to list the characteristics which they considered to be necessary for vocational success in four broad vocational areas: manual, repetitive, machine operations, and social. He concluded that for the mentally retarded, manual labor was the most satisfactory, while machine operation and "social" were the least satisfactory.

Peckham (95) analyzed job-adjustment problems of 80 cases of mentally retarded adults. He found that job adjustment was possible in the absence of associated physical or emotional handicaps. He also analyzed the reasons why the retarded quit their jobs. These included ridicule by fellow employees, lack of sophistication in personal life, dissatisfaction with salary, and lack of responsibility.

In a review of the literature, Tizard and O'Connor (130) asserted that the defective does not tire from monotony any more than the normal, nor is he less persistent. Johnson (61) stated that "the ability to get along with co-workers, job interest, desire for more than adequacy of performance, dependability, and cheerful acceptance of criticism seem to be the traits employers seek." Coakley (23) found no relation between wages and IQ among mental defectives, but that there was a high positive relationship between stability and job tenure.

Public Law 113 was passed in 1943 by the U. S. Congress. This law permitted the civilian vocational rehabilitation division to give services to the mentally retarded. DiMichael (32) described the services which are now

available thru the state rehabilitation agencies. Several pilot studies have been conducted and reported by DiMichael (33). These studies indicated that schools are giving inadequate vocational training, that social attributes on the job are more important than intelligence in satisfactory job performance, that the rehabilitation agencies need better trained counselors for working with the mentally retarded, and that the counselors need more time per case to produce better results.

Sheltered workshops for the mentally retarded as a means of better occupational training have been discussed and advocated by Richmond (100) and Rockower (102). Tizard (129) found that in a sheltered workshop situation there was little difference in production and behavior between "strict" and "friendly" supervision, but that both were superior to "laissez-faire" supervision.

Effects of Educational Programs

The question of the improvement of mental defectives thru training has continued to provoke study and controversy. Doll (34) raised the semantic problem of the curability of mental deficiency. He feels that curability is dependent upon the concept of mental deficiency and the methods used to satisfy the concept.

Shotwell (113), after following up 31 mentally defective girls released from an institution, stated that to a large measure the successful rehabilitation was due to training received in the institution. Muench (89) retested eight men who had been classified as mental defectives 20 years before while in an institution. The mental test averages were all significantly higher in the retest than in the original. Muench feels that mental defectives may respond better to good training in society than to institutional care. Doll (34) felt that Muench's conclusions were not valid since he did not demonstrate that training effected the changes. Doll ascribes changes to delayed maturation. In evaluating the results of a delayed training program at the Wayne County Training School, Patterson (94) indicated that academically, the members of the delayed group caught up with the others, learned faster, and were better adjusted.

The most controversial study was reported by Schmidt (110). She studied the personal, social, and intellectual characteristics of 254 "feeble-minded" boys and girls in special classes in Chicago. The initial IQ's of these children averaged 52.1. After three years of training, the IQ's rose to 71.6. After five years of postschool experience, the average IQ was 89.3. Changes in personal and social characteristics were equally sensational. In an on-the-spot study of the Schmidt claims, Kirk (72) examined a sample of the records of the classes which Schmidt had taught in Chicago and found numerous discrepancies in the data reported by Schmidt. He raised serious questions about the authenticity of Schmidt's data. For example, instead of an initial average IQ of 52.1 as reported by Schmidt, he found an initial IQ averaging 69 in Schmidt's classes. In her rejoinder

Schmidt (111) did not make a point-for-point refutation of Kirk's criticism. In a review of the Schmidt monograph, Goodenough (44) also raised many questions about the study. Nolan (91) edited opinions on this controversy by Newland, Yepsen, Goodenough, Terman, and Strothers, who all questioned the Schmidt data. Hill (56) studied changes in IQ's of adolescent children in the Des Moines public schools over a period of years and failed to find any significant changes.

Organization and Administration

Provisions for classes for the mentally retarded in public-school systems have been accelerated since the end of World War II. Many states have added to their program, provisions for the mentally retarded. Martens and others (86) summarized legislation up to 1949.

There has been an increasing tendency to expand provisions for the mentally retarded to include younger children at the preschool and primary level, and also for older children at the secondary-school level. Emphasis on the systematic observation of learning difficulties as a basis for teaching was developed by Weiner (136, 137, 139). Stress on the education for young children has been reported by Kirk (73), Sloan (117), and Weiner (138). At the secondary level, reports have been made by Boland (14), Hegge (53), Hill (57), Kirk and others (75), and Lovell and Ingram (80). All authors report a core program or experience areas as suitable procedure for the mentally retarded in the secondary schools.

Curriculums

A textbook by Kirk and Johnson (74) described a developmental curriculum at five levels: preschool, primary, intermediate, secondary, and postschool. It included sections on the teaching of the skill subjects and the practical arts. General goals and aims of education of the mentally retarded have been discussed by Delp (30), Hegge (55), Kahn (66), Kelly and Stevens (70), and Patterson (93).

Stress on social adjustment in curriculums for the mentally retarded is reflected in many articles. Borreca and others (15) described a workshop project in living practiced in the New York program of occupational education. Jones (65) studied the adjustment of imbeciles and concluded that the group situation is the ideal arrangement for social growth. Kelly (69) reported a project of a family-living course for mentally retarded girls. Traill and Douglas (131) devised a functional course for the development of self-sufficiency and social adjustment.

The New York program of occupational education for the mentally retarded has attracted considerable attention. The Association for New York City Teachers of Special Education published a monthly magazine entitled *Occupational Education*, in which they described the development and organization of programs and curriculums for the mentally retarded, an

example of which was given above by Borreca and others (15). They defined occupational education as occupational information, vocational guidance, vocational training, vocational placement, and social placement.

There has been a paucity of research studies on reading with the mentally retarded as compared to previous review periods. Janes (59) followed up the reading progress of children in special classes in Camden, New Jersey. He found that the gains in reading during the first two years of attendance in a special class were more than expected, while those in the last two years were less than expected according to their mental growth. French (41, 42) considered teaching mental defectives to read an individual diagnostic problem, but he was successful in teaching reading to a group of three retarded boys with an auditory-kinesthetic presentation. Mintz (88) studied the relationship of reversal errors in reading to laterality in subnormal boys. He found no evidence of a relationship.

Studies on arithmetic, a previously neglected field, outnumbered those in the reading area. Benton, Hutcheon, and Seymour (11) compared normal and mentally retarded children on the relationship of arithmetical ability to finger-localizing abilities. They found some relationship between right-left discrimination and finger-localizing ability. Cruickshank (25, 26, 27) compared mentally retarded boys with normal boys of comparable mental ages on various arithmetic problems. He found that the mentally retarded were inferior to normals in (a) the use of arithmetic vocabulary, (b) work habits, (c) ability to ferret out superfluous materials in problems, and (d) in deciding on solutions to problems. Gothberg (46) found that percepts of time-relationship developed in the mentally retarded before concepts of time. She also found that concepts of time were closely related to mental age. In general, her findings indicated that the mentally retarded have little understanding of sequential temporal concepts. Lehtinen and Strauss (76) organized a systematic program for the development of number concepts with brain-injured children.

Parent Education

During the last nine years parents of retarded children have organized to assist in making better provisions for retarded children in schools and institutions. These organizations and their purpose have been described by Marino (85), Sampson (105), Weingold (140), and Weingold and Hormuth (141).

Studies and opinions on the psychological problems and attitudes of parents with retarded children are described in numerous articles by Boyd (16), Grebler (47), Hastings (51), Jensen (60), Sheimo (112), Stone (123), and Thorne and Andrews (128). Suggestions for interviewing and aiding parents with retarded children are summarized by Price (98), Rheingold (99), Teska (125), Walker (133), and Wardell (135). Purpose and methods of home supervision of the mentally retarded are described by Cianci (20, 21, 22). Crutcher (29) also discussed the problem of home

care of the defective. The family care program in Scotland and England was discussed by Pollock (97). A follow-up study of the results of home care has been reported by Cohen (24).

Need for Research

The need for research in diagnosis and education is felt by many workers. A survey of educational research led Cruickshank (28) to state that there is a paucity of real research in this area. Doll (36) described present research at Vineland, while Haskell (50) reviewed the development of educational research over a 15-year period at the Wayne County Training School. McCandless (81) requested more research on the effects of environment on mental retardation.

The writers' general impressions concerning the nonmedical research in this field may be summarized as follows: (a) There have been many studies on psychometric tests with the mentally retarded. These have attempted to refine the present instruments, or reinterpret their results. (b) Studies on projective tests have flourished and diminished during the period reviewed. (c) Advancement thru research has been made by sociometric studies and by investigations on guidance, job placement, and follow-up studies. (d) There has been a decrease of substantial research on educational problems.

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CHAPTER III

The Gifted

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THE material reviewed here immediately succeeds that reviewed by Woods (78) in the June 1944 REVIEW OF EDUCATIONAL RESEARCH. Altho a few studies reported do not represent the epitome of research, methodologically, they have been included for illustrative purposes.

The term "gifted" is used here to include both those who are identified as possessing superior learning aptitude—the "mentally superior"—and those who are regarded as possessing outstanding capabilities which are not necessarily of an academic nature—the "talented."

In addition to the usual array of studies, the 1944-1953 period is characterized by four major research writings: (a) an increased (extraschool) awareness of the potential social contributions of the gifted, (b) a growing curiosity as to just what giftedness is, (c) the inauguration of a 10-year community study that could be quite fruitful, and (d) what appears to be a slight increase in graduate research on the gifted and their problems.

Major Contributions

The *magnum opus* is Terman and Oden's (59) 25-year follow-up of the genius group. By mid-1946, 1418 or 97.5 percent of the original subjects had been located, and 95.3 percent of these supplied information. Suffice it here to indicate that the trend of the results previously reported has been quite generally sustained. The others had died. The residual group was found to be superior to the generality of the population in general health, in mental health (slightly), and in measured intelligence (in spite of some "regression"), in percentage marrying (14 percent of the men and 16 percent of the women had divorced or separated by 1945), in entering and graduating from college, (nearly eight times relatively greater than in California), in occupational status (but not so much in earned income), and in publications, patents, and professional recognition. An analysis of the records of the 150 most successful and of the 150 least successful gifted men showed the greatest contrast in favor of the former group in the areas of "drive to achieve" and "all-round social adjustment." Superior success appeared to be associated with stability and the absence of disturbing conflicts rather than with instability and emotional tensions. Terman felt that his findings confirmed a statement he made 30 years ago: "The IQ level is one of the most important facts that can be learned about any child." Of those studied, however, 133 had had no education beyond high school. The observation was made that, of the total group, probably one-third had left school with less training than they should have had. Terman expects to be able to report in 1953 the results of a 1950-51 follow-

up intended to throw more light upon factors influencing the rate of reproduction of the group as a whole, and the correlates of scientific achievement among the 800 men in the group.

Hildreth's book (24), reporting 10 years of the Hunter College program for the gifted, is a major contribution of this period. Described in considerable detail are the school's organizations, goals, curriculum, instruction, daily life of the students, relation to the community and to the parents, guidance and adjustments, the teachers and their preparation, the academic achievement, skills, and attitudes of the students, and some issues and unsolved problems. Witty edited *The Gifted Child* (74) for the American Association for Gifted Children. Much of the content has appeared elsewhere in professional literature, but certain research findings are introduced in it for the first time. Less well known, for instance, is the chapter by Hobbs (25) incorporating descriptions of nonacademic provisions for gifted children in Worcester, Massachusetts; Lawrence, Kansas; Bernardsville, New Jersey; Dayton, Ohio; Palo Alto, California; Dallas, Texas; and Brooklyn, New York. Miles (42) prepared an excellent integrative chapter on the gifted, supported by 356 references ranging from 1853 to 1944.

Social Awareness of the Gifted

World War II at least heightened society's sensitivity to its need to benefit more fully from the superior potentials of the gifted. The University of Pittsburgh held a conference on human resources and higher education at which Wolfe and others (77) reported on the present number of technical and scientific workers and the future needs in this area. The National Manpower Council (56) reported that there was still a shortage, both numerical and qualitative, in the number of persons adequately trained to do scientific research. Its cause for concern lay partly in the fact that for every high-school graduate who ultimately earns a doctoral degree, there are 25 others who have the intelligence to do so, but do not. Altho their frames of reference differ somewhat, the general import of the findings of the National Manpower Council is reflected in numerous earlier reports of the discrepancy between ability and college attendance and achievement. Thus, Hollingshead (27), for example, pointed out that nearly two-fifths of the top quarter of students finishing high school do not enter college. Similarly, Phearman (47) reported that 32 percent of the boys and 40 percent of the girls in the top 9 percent ("scholastically talented") among 2616 graduates of 94 Iowa high schools did not go to college (and 8 percent of the top 2 percent did not go on). Wolfe (75) indicated that of those who scored above 150 on the *AGCT*, more than 20 percent left college before graduating. Wrenn (79) reported, on a follow-up nine years after graduation, that of the top 16 percent of a group of Minnesota high-school graduates, only 45 percent of this top group had received baccalaureate degrees. In approximate figures, only 4 percent of the high-school graduates with IQ's 125 and above had earned advanced degrees.

That different collegiate academic areas had differential appeals was shown in the Wolfe and Oxtoby report (76) that physics, chemistry, and law were attracting higher averages of capability while the averages for those in the fields of business, commerce, and education were lowest in the tests used. Reporting on the use of the *Selective Service College Qualification Test*, Chauncey (11) indicated research validation for the draft-deferment procedure based jointly upon rank in class and test score.

H. Lehman (34) in presenting historical excerpts describing great achievements in fields such as anatomy, physics, physiology, chemistry, poetry, prose, and "practical invention" by 91 youngsters from 12 to 21 years of age, reiterated the emphasis upon the importance of the early years.

The Science Talent Search, begun in the early 1940's with funds from Westinghouse, now starts annually with an initial group of 15,000 entrants. Edgerton and Britt (18) reported that of those selected in the fourth annual talent search, the test scores were "fairly independent" of the amount of training the selectees had had in mathematics and science. Of one group of 300 selectees, over one-half of the 265 boys wanted to study engineering, chemistry, and physics. Of the 85 girls, 16 percent preferred medicine and 14 percent, chemistry. The numerical preponderance of boys over girls in the groups of winners has been consistently statistically significant (17). In their study of 3175 contestants in the 1942 Science Talent Search, (with a 78 percent return of their questionnaire), Edgerton and Britt (19) found that among the winners, 97 percent of the boys and 89 percent of the girls had begun college. Among those given honorable mention, the percentages were 87 and 92 respectively; among other participants, 76 and 70 respectively.

Stalnaker (58) reported that the Pepsi Cola scholarship program, costing some \$1,900,000 over four years, had provided 489 four-year scholarships, 27 "honorary scholarships" (involving no funds), 26 three-year scholarships, and 26 graduate fellowships for advanced study. The fellowships represented a total of nearly \$100,000. But all such extraschool funds are not going for scholarships and fellowships. A Markle Fund research grant (54) has been made to the Social Science Research Council for the purpose of revealing psychological characteristics of the talented young other than those revealed by present measures of intelligence and aptitude.

Psychological Aspects of Giftedness

Parkyn (46) reported 4.8 percent of 10-year-old and 4.9 percent of 11-year-old New Zealand children as having *Otis Self-Administering Test* IQ's of 125 and up. On the basis of an intensive study of 50 intellectually superior children, he reported general superiority and fairly even development, altho he observed that above the primary level, their academic performances tended to be less than might be expected. Jenkins (28) found 13 studies reporting testings of 22,301 Negro children. Among these, he

found .3 percent to have IQ's of 140 and above and "fully 1 percent" 130 and above. He reported locating 18 Negro children having *Stanford-Binet* IQ's above 160, one of them being 200. All were found in northern or border states; all found in the southern states had Binet IQ's of less than 160. Lewis (36), in reporting greater relative incidence of girls in the superior group and a higher relative frequency for boys in the inferior group, cautioned against hasty generalization on account of varying instruments used, varying conditions at the elementary, secondary, and college levels, and the possibility of a slower developmental rate for boys.

Thorndike (62) found that terminal *Scholastic Aptitude Test* scores could be predicted with about equal accuracy two, four, six, and even eight years prior to college entrance. He recommended the use, however, of supplementary guidance information, and the averaging of intelligence-test results when two or more are obtained. In studying the significance of *Terman's Concept Mastery Test* results, obtained in the follow-up of the genius group, Thorndike (61) concluded that Terman's group was three-fifths as far from the adult mean on highly verbal material as they were as children. This was posited as the maximal regression that might be expected over a 20-year period.

Lewis (37) studied *Kuhlmann-Anderson Intelligence Test* data, *BPC Personal Inventory* data, and teachers' nominations (without knowledge of the test data) of children believed to be "extremely mentally retarded," of "genius" caliber, and "distinct problems." Data were obtained from 455 schools in 310 communities. The teachers indicated they believed 3359 (2138 boys and 1221 girls) to be extremely mentally retarded, 341 (158 boys and 183 girls) to be geniuses, and 2041 (1567 boys and 474 girls) to be "distinct problems." Analysis of the data on those reported to be retardates showed some 63 percent to have *KA* IQ's of 80 and above; of the "geniuses," 27 percent had earned *KA* IQ's of less than 110. A study of the personal inventory results and background factors revealed no basis for selection in any of the groups. Those selected as "geniuses" gave evidence of an ability to adjust to classroom situations, an intellectual and academic bent, highly desirable personal characteristics, and academic achievement.

The clouded picture of socio-economic backgrounds has been studied. Brunner (8) found that for each year of age, the higher the rent, the higher the median year of schooling accomplished, actual differences being least in the lower age-groups. Warner, Havighurst, and Loeb (64), referring to a study of Milwaukee high-school graduates with IQ's of 117 or higher, brought out that, of such children whose parents earned \$5000 or more per year, 94 percent were in college, whereas of such children whose parents earned \$2000 or more per year, only 44 percent were in college. On the basis of their analysis of information on 444 Washington, D. C., third-grade Negro children in 1938-39, and 491 such children in 1945-46, Robinson and Meenes (50) found only a slight relationship between the children's *Kuhlmann-Anderson* IQ's and the occupations of their parents, altho the correlation was higher when employment possibilities were better. Conant (12), on

the basis of data compiled from *American Men of Science*, found a correlation between the number of scientists listed and the expenditure per child in the states that spend less than \$120 per year per person. Edgerton and Britt (16) analyzed data they had collected over four years in the Science Talent Search and found positive rank order correlations between the number of winners and nine educational and economic indexes for the several states. They found that the average number of contestants selected for the honors group was not proportional to the number of high-school seniors in the different states.

In general, clinical studies of the gifted modify little their heretofore reported emotional picture. Edelston (15) has presented 18 brief clinical case reports illustrating the wide variations in the origin and nature of hampering emotional influence found in the Bradford (England) Child Guidance Clinic. Burns (9) reported a study of 67 superior grammar and high-school children referred to the Birmingham (England) Child Guidance Clinic over a period of five years. He found a statistically significant sex difference in the referrals: 21 boys and 3 girls of IQ 135 and above, and 30 boys and 17 girls between IQ 116 and 134. He observed "neuroses" to be more common among boys and "behavior problems" among girls. He concluded that there was present in the boys a special syndrome showing phobia of school with common underlying personality characteristics. Thom and Newell (60) made a follow-up study of 43 children seen originally at CA's 2-to-10 in their child-guidance clinics between 1927 and 1934. The average interval between contacts was 11 years. Mean Binet IQ was 139. On retest, *Stanford-Binet* IQ's of 135 and *Wechsler-Bellevue* IQ's of 125 were obtained. Twenty-four of the preschool children "fulfilled the predictions of superiority." Twenty-one had made successful adjustments, 14 with the help of favorable circumstances and guidance. Twenty-two were less successful, financial distress operating in 13 of these cases. The authors regarded early good habits, emotional acceptance, and economic security above the point of distress as factors contributing to good adjustment. Wells (65) presented 10 case summaries showing adjustment problems of mentally superior Harvard students. On the basis of 28 other case summaries presented (67), which Wells regards more nearly comparable to the Terman group, he observed that, in general, the adjustment difficulties did not appear to be a function of the superior mental ability of these men. Studying the Harvard freshman national scholarship appointees from the class of 1952, Wells (66) found that those who were dropped for academic reasons were not different from those retained except that those dropped were taller and heavier.

Pioneering in a promising area, Roe (51) studied clinically 20 eminent American-born and trained biologists by means of the Rorschach, TAT, a verbal-spatial-mathematics test, and personal interviews. Seemingly inadequate parent-child relationships were observed in eight of the cases. The essentially universal characteristic of the group was a dominating devotion to their area of interest. Clinically, they appeared stubborn, per-

sistent, and little interested in interpersonal relationships. A parallel study (52) is reported by Roe on eminent physical scientists, and similar data have been collected on psychologists and anthropologists. Shannon (57) endeavored to ascertain the traits of 250 research workers up to the time of Terman and E. L. Thorndike. Most frequently identified in the biographical material were the traits of enthusiasm, creativeness, and aggressiveness; least frequently, those of religiousness, self-control, and health. The one negative trait identified was antisociability.

Mensh (41) reviewed eight Rorschach studies devoted to or bearing indirectly on the gifted. Major factors which were regarded as important in evaluating Rorschach responses of the gifted were (a) the quality and quantity of superior responses, (b) the significance of differences between sexes and at the different age levels in terms of superior responses, and (c) the increasing availability of tentative normative data for various upper mental levels. Gair (21) reported on the Rorschach characteristics of 29 seven-year-olds with *Stanford-Binet* IQ's ranging from 135 to 174. Comparing these performances with those of 131 five- to 11-year-old children of average or below average IQ, it was observed that (a) the number of responses was high for the chronological age of the child, (b) more *W* and few *D* responses were made than for children of same and higher chronological ages, (c) they showed greater maturity in increase of *F%/*M** and *FC*, (d) there was an increase in *CF*, (e) the superior had a wider range of interests, and (f) they appeared well adjusted.

Wilson (69) reported some normative data on the Hunter College children, mentioning that the *Wechsler Bellevue* IQ's of these children tended consistently to run 20 to 25 points below their *Stanford-Binet* IQ's, altho the correlation between them on 153 cases was .49. On the *Maier Art Judgment Test*, the *Drake Musical Memory Test*, the *Kwalwasser-Rush Test*, the *Ruch-Popenoe General Science Test*, the *Stenquist Mechanical Ability Test*, and the *Detroit Mechanical Aptitude Test* the varying samples taking the different tests tended to perform from average to significantly above the norms for their chronological ages. Wide variability, however, was noted. Except in the case of the *Musical Memory Test* (an *r* of -.16 on 144 cases), correlations with the total scale *Wechsler Bellevue* IQ were low positive (.39 to .57).

Ausubel (2) studied experimentally the nature of intrinsic and prestige motivation of 79 sixth-grade children with IQ's of 130 and above. He found a normal range of responsiveness to a prestige incentive. Individual-difference scores reflective of degree of this responsiveness showed high split-half reliability and fair generality over test materials. He further concluded that children who were more responsive to a prestige incentive more frequently set up a self-imposed competition with neighbors in the anonymous test situation, and in other ways appeared more competitive.

A variety of contrast studies has appeared. Lewis (35), drawing from a total pupil population of 45,000 in 455 different schools in 310 communities in 36 states, studied the *Unit Scales of Attainment* performances of the

top 10 percent on the *Kuhlmann-Anderson* with similar performances of the bottom 10 percent, and concluded, albeit cautiously, that the mentally retarded group tended to achieve above expectations while the reverse was true of the superior group. C. Lehman (33) compared the top 10 percent on the *Kwalwasser-Dykema Music Tests* with the bottom third and found the upper-group to be statistically (at the 1 percent level) superior—intelligence and motility rate—and superior (at the 5 percent level) in hearing and basic metabolism. The lower group had a significantly higher pulse rate. No differences were found in vision, reaction time, or blood pressure. Lightfoot (38), by means of home visits, interviews with the children, a psychological test, a rating scale, a projective test situation, and case study materials, compared 48 superior Speyer School children with 56 mental retardates in that school. Traits observed particularly in the bright were autonomy, creativity, dominance, affiliation, protectiveness, play participation, and achievement, while those for the retarded were dependence, seclusion, rejection, placidity, and defense behavior. According to Maller's sixth-grade norms, the bright were "somewhat better adjusted" and the retarded were "less well adjusted." Two studies were made comparing bright and retarded elementary-school children with mental age held constant. Bleismer (5), studying reading behavior, found that the groups tended to be alike on the less complex or somewhat mechanical skills in reading comprehension but that bright children were superior with respect to the more complex functions. Kolstoe (32), studying performances on the *WISC Comprehension and Coding Test*, the *Primary Mental Abilities Number Test*, and a symbol-copying test, found no evidence that his bright group (Binet IQ 116 and above) were superior in "vocabulary, reasoning, and a general memory ability," nor that his dull group (Binet IQ 84 and below) were superior in "general performance or manual manipulation."

Maybury (40) made a record of play materials chosen by nursery school children (average CA, 49 months and average *Stanford-Binet* IQ, 156). Materials most frequently chosen indoors were wheeled toys, books, and housekeeping materials; for outdoors, they were swings, digging tools, and slides. No sex differences were observed indoors, but outdoors girls preferred swings, and boys chose digging activities. Farrell (20) endeavored to study the understanding of time-relations of 75 five-, six-, and seven-year-old children with average IQ's of 145 or slightly higher. Using a 27-item test, she reported evidence of growth between the five- and six-, but not between the six- and seven-year levels. Dunlap (14) obtained some test results on 24 children (median CA, 14.5; median *Educational Grade Status*, 9.6) screened for participation in the "Quiz Kids" program. On the *ACE Psychological Examination*, 16 scored at the 99th centile for unselected high-school students, 7 fell between the 91st and the 97th centiles, while 1 was at the 56th centile. Fourteen had *Kuhlmann-Anderson* IQ's ranging from 103 to 139 (median, 126); 7 had *Otis Beta* IQ's of 121 to 135 (median, 125); and 11 had *Stanford-Binet* IQ's of 103 to 162 (median 131). On the basis of 41 questionnaires returned by "Quiz Kids" who had

participated three or more times in the program, Witty (73) found that a few had been tested, all these registering IQ's above 135. All reported themselves as being in good health; 14 boys and 12 girls were then attending school, 2 had obtained their doctoral degrees, and 14 their master's. They favored the social sciences, the physical sciences, and English. Fourteen were working full time, in professional and semiprofessional fields, with an average yearly income of \$5000. They had highly varied recreational and hobby patterns. Their attitudes toward the psychological impact of being on the program varied. Fifteen recommended special classes for the superior, two favored acceleration, and seven felt that smaller, regular classes were needed.

The Educational Picture

In 1949, Wilson (71) sent a brief questionnaire to 209 colleges and universities, 127 cities and schools, and to the 48 state departments of education to ascertain what was being done educationally for the gifted. The discouraging picture found was characterized by the respondents with expressions of a "strongly felt need" for (a) information on the actual educational needs of these children, (b) more trained teachers who would know the needs of these children, and (c) more information about the nature of gifted children. Witty (72) had a student query 39 city-school officers. The survey obtained 33 replies, 6 of them to the effect that provisions for the gifted were being considered. Citing Santayana's 1947 report (53) to the effect that only four states, (California, Oregon, Pennsylvania, and Wisconsin), have some legal provision for special education for gifted children, with only two of these providing any financial aid for the work, Witty found that six states were making some educational provision for the gifted. That the picture continues impoverished was found to be the case by Wilson (68), who obtained 81 percent returns from city-school administrators, 95 percent from state education offices, and 54 percent from universities and colleges which were training teachers. About one-half of the latter group replying made no mention of any special provisions bearing on the gifted. Only Pennsylvania was found to have special certification for teachers of classes for the mentally superior. In another study (70), Wilson found only six teacher-training institutions giving any special preparation for teaching gifted children. An Ohio study (45), based upon a 90 percent return from 258 school superintendents, showed 18 percent reporting no special provision for their gifted. Per-pupil costs reported for 1948-49 on the Cleveland major-work classes were \$256, or about one-third more than the regular elementary classes, about the same as junior high-school classes, but less than at the high-school level. Of 118 teachers in four New York City schools having one or more classes for the superior, 65 percent felt such classes should be continued; 29 percent favored abolishing them. Younger teachers and those who had worked in such classes tended to favor the special classes (30). Justman and Wrightstone (31) queried all 79 New

York City junior high-school principals concerning the organization of special classes for the gifted. Of the 74 anonymous replies, 46 principals favored retention of such classes, and 28 favored abolishing them. While such classes were regarded by this latter group as fostering the development of snobbery and as being a divisive force in the schools, one of the weaknesses laid to such classes was that they failed to provide enrichment!

World War II threw into sharpened focus the possible social significance of acceleration, particularly in higher education. Pressey's monograph (48) presented the essence of a lengthy series of studies on this problem, the details of some of which already had appeared in the literature. Evidence was presented showing that (a) those who entered college at earlier ages were more likely than others to graduate; (b) those who graduated at earlier ages than conventional earned better marks, difference in basic capacity being allowed for; (c) these college accelerates tended to participate more in extracurricular activities than did their lock-stepping brothers and sisters; and (d) only one-third of those offered the opportunity of an accelerated program accepted it. Berg and Larsen (4) found that 36 students, who were selected on the basis of four criteria for admission to college one to two semesters before they were due to graduate from high school, earned first-semester average marks slightly more than one sigma above the average for all their fellow freshmen. Hobson (26) studied the school performances of children who had been admitted to kindergarten and first grade, primarily on a mental age criterion, within six months of conventional entering ages. The underage group were superior academically, physically indistinguishable from the others after the kindergarten year, and were less often referred to school officials for emotional, social, and personal maladjustments.

Brown (7) reported successful results obtained by placing a group of 30 children of superior academic ability with the same teacher for Grades VII and VIII, provisions being made for individualized enrichment. Their academic performance remained superior, their out-of-school life gave evidence of essentially normal interests and activities, and 26 of them were actively planning to go to college. Albers and Seagoe (1) studied the ninth-grade algebra behavior of students having Binet IQ's of 125 and up and who were given considerable enrichment material and freedom in regular algebra classes. They observed that (a) the regular class time of these students could be reduced at least 15 percent without impairing their basic preparation, (b) these students had improved attitudes toward mathematics and science, and (c) no special training was needed for the teachers working in such a program. Mosso (43) reported favorably on the development of a seminar for high-school seniors, basing his conclusions on the observations of fellow teachers and pupil reactions to the program.

The major research evidence for this period on special-class outcomes at the elementary level was presented by Hildreth (24). Her description of the 10-year Hunter College program and her report of its outcomes underscore again the general trend of favorable results of special-class programs.

Her findings were based upon (a) the fact that these students lived up to their academic expectations, (b) the fact that pupils having this program succeeded at the junior and senior high-school levels, (c) the evidence obtained in follow-up interviews with their "students," and (d) the favorable testimony of the parents of these children. The emotional adjustment of these children was regarded as satisfactory, with only normal exceptions. Carlson (10) evaluated, at the end of four years, an elementary-level special-class program with an emphasis on mental health. Children with Binet IQ's ranging from 129 to the 150's, some with and some without personality problems, were studied both in a special-class program and outside it, the latter group later being placed in a special class. Of the 16 in the special class, 10 later were elected to offices in regular classes, while only 2 of the 9 in the special class for only one year gained such recognition. The special-class program was judged to be desirable, and it appeared helpful to place the maladjusted superiors in with their well-adjusted intellectual peers. Nelson and Carlson (44) reported on another aspect of this program to the effect that academic achievement appeared not to be affected by such placement but that the special class was more adequately stimulating to the pupils. Schwartz (55) compared, at the end of four months, the results obtained in an experimental elementary and junior high program with those obtained in a control situation and found the experimental group superior in achievement and in personality traits. On the other hand, Luchins and Luchins (39) interviewed 190 children in the fourth, fifth, and sixth grades with respect to their and their parents' attitudes toward children in special classes and toward placement in classes for the bright, or in classes for the dull. A high percentage thought their parents would prefer them to be in classes for the bright. They tended to prefer playmates from the bright classes. The bright pupils wished to remain there. It was observed that such "homogeneous grouping seemed to help create a new kind of caste system in the schools." Zorbaugh, Boardman, and Sheldon (80) mention a sociometric study by Kerstetter, which was interpreted as warranting the conclusion that even when the gifted are in special classes or schools for such children, "the more highly gifted are likely to be followers rather than leaders, tending to rank in the middle" in terms of acceptance and rejection.

In studying the reading behavior of 103 high-school freshmen and sophomores, Barbe (3) found that the amount of time spent in reading declined after the age of 12. Reading was reported as enjoyed by 86, altho 10 percent of the boys and 14 percent of the girls reported they did not use the school library, and 38 percent of the boys and 12 percent of the girls reported no use of the public library.

Jensen (29) found that over one-half of the superior students, given an opportunity to use independent study and self-scoring tests in a course in educational psychology, earned "A" grades in the course, taking the regular examinations, and advantageously used the time saved by their self-educative procedures.

Dowd (13), using personality questionnaires on the best and poorest achievers among the highest decile on the *ACE*, reported that whatever factors operated to depress achievement in colleges operated in like manner before college entrance, as indicated by high-school achievement. Another study by Preston (49), of inefficient readers among students eligible for Phi Beta Kappa, showed that the majority were aware of their poor reading skills and would have welcomed remedial reading assistance. On the basis of a questionnaire study of high-school students showing a disparity between their capacities and their achievements, Bond (6) found that the bright students had a tendency to spend a disproportionate amount of time on courses they liked best and that they had poor study habits acquired in earlier grades where success came very easily.

Inaugurated in 1951 was a 10-year study, directed and described by Havighurst and others (23), including those children from the fourth grade upward in the public schools of a midwestern city who are found (a) to have high tested intelligence, (b) to be talented in creative fields such as music and writing, (c) to have special abilities in a variety of socially useful areas such as mechanics, science, dramatics, and social organization, and (d) to have creative talent, or the "ability to make new and novel solutions to problems."

In addition to the studies thus far specifically cited, the listing, in *Psychological Abstracts* alone, of four master's theses and five doctoral dissertations bearing directly on the gifted between the years of 1946 and 1952 inclusive, suggests an encouraging increase in graduate research in this area. It is interesting to note that the average number of research articles published per year and covered in the REVIEW, including this issue, has hovered between seven and eight. Such consistency bespeaks tenacity if not fecundity.

Needed Research

Space limitations preclude any attempt at enumeration of specific problems. Judging by the preponderance of studies on the various facets of the educational problems bearing upon the gifted over the past 20 or so years, encouragement is hardly needed in this area, altho some direction may be fruitful. For instance, more attention could well be given to the ascertainment and evaluation of the larger and later social outcomes of different educational experiences of the gifted.

Pervading, with varying degrees of explicitness, a number of the researches is the query as to just what constitutes giftedness or even mental superiority. Outside of occasional recognitions of the emotional aspect of these characteristics and a trace of concern as to the nature of the motivational picture of the gifted, fundamental research on this important area is practically completely lacking. Most promising and potentially stimulating in this regard are the descriptions of embryonic fundamental research and the theorizing of Guilford (22) and of Thurstone (63). More analytical

studies of the nature of mental superiority and creativity and the more objective identification of operant personality traits, such as tenacity, initiative, and motivational patterns could well be the most promising research area in the next decade or quarter-century.

The Terman studies will continue to yield fruitful data, both as regards the data themselves and the researches which they suggest. While his studies will enjoy continued stature, they well could be supplemented by another pattern of cross-sectional and longitudinal studies directed at the ascertainment of the nature of the interpersonal relationships, definitely more than sociometric in nature, as regards the reactions of the gifted toward the groups in which he happens to be, as regards the reactions of his varying groups to him, and as regards the impact which his being in such groups has on the groups themselves. Such an extensive study would need to be made at varying age levels, starting before school age, continuing at successive chronological age points into adulthood, and then continuing over a period of years until a longitudinal picture will have been completed. The value of such a study to educational procedures and to the increased social utilization of the gifted should be significant.

The clinical study of selected gifted children and adults, illustrated by some reviewed here, including both the successful and the nonsuccessful, appears to be a challenging field which can produce fruitful hypotheses for more fundamental research which would relate significantly to other research proposed here.

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CHAPTER IV

The Socially Maladjusted

CHARLES A. ULLMANN

PREVIOUS reviews of the literature on the socially maladjusted child have tended to deal with the field as if it were co-extensive with juvenile delinquency. This may have come about because of (a) the abundance of studies in the area of personal and social development which capitalized on the relative accessibility and social importance of groups whose members had been defined as delinquent by judicial procedures, and (b) the tendency to regard delinquency as a manifestation of disorganization in society as reflected in the activities of juveniles. Shaw and McKay (101), for example, suggested in 1942 that a high proportion of delinquency in children was due to the social conditions in which they were brought up. They pointed to the high intercorrelation between juvenile delinquency and a number of conditions that reflected the presence of a general basic factor which they termed "social disorganization."

The present chapter on the socially maladjusted child gives considerable attention to studies dealing with a major current research problem, namely, criterion research leading to better definition of the nature and scope of the concept itself. For the present, social maladjustment may be regarded as representing a congeries of disorders in psychosocial development. The term is thus used here both to refer to disorders in which emotional or personal aspects are prominent and disorders which involve interactive relationships. The literature has been sampled in terms of its bearing on deviant forms of psychosocial development, including juvenile delinquency, but not primarily in terms of juvenile delinquency. Because of the large number of pertinent studies which have appeared in the nine years since the last summary, especially following the close of World War II, no effort is made to present a chronologically representative account. Those trends are emphasized which have emerged as dominant research interests in the period beginning July 1949. Readers who are interested in systematic reviews of the field of juvenile delinquency as such may refer to the recent works by Mihanovich (74) and by Tappan (109). Those interested in the processes whereby social disorganization bears upon the individual's pattern of adjustment may refer to Bloch's (6) recent volume.

Prevalence of Social Maladjustment

The difficulties in obtaining statistics of prevalence and in screening a population to identify individuals who are maladjusted arise from (a) vague and partial definitions of the term maladjustment itself (discussed below under "Theories and Classifications"), and (b) the absence of instruments of proved validity for the assessment of maladjustment, whether these instruments be ratings, psychological tests, or performance measures.

Murphy, Shirley, and Witmer (80) have pointed out that court statistics are wholly inadequate as a measure of the amount of youthful illegal behavior in the community, and "even a moderate increase in attention paid by the police creates the semblance of a crime wave." On the basis of continuous casework with 114 youths, these authors reported that "at our conservative estimate the boys committed a minimum of 6416 violations over a five year period while only 95 of their violations became a matter of official complaint . . . authorities took official action in less than 1½ percent of the infractions" (80:683).*

The dependence of measures of prevalence upon adequate definition is shown by the work of Jastak (54) who, after developing certain theoretical criteria for the assessment of feeble-mindedness, reviewed the records of 381 patients. He diagnosed 258 patients as other than feeble-minded, and of these, 183 were then classified as having personality and/or conduct disturbance, neurosis, psychopathic personality, or simple maladjustment.

Ullmann's monograph (111) has brought together the findings of studies of prevalence of maladjustment which have indicated that on the basis of teachers' judgments, not less than 8 percent of school children are maladjusted. Teachers, moreover, do not appear to be sensitive to the stresses and to the problems which children experience within themselves, so that the 8 percent figure may safely be regarded as a conservative figure if the teachers' judgments are assumed to be valid.

Craig (19), on the basis of data obtained from a central registration of children who experienced behavior or personality difficulties which brought them to the attention of one or more of the public and private youth-serving agencies in New York City, found that 24 of every 1000 children and young persons aged 5 to 20 years in New York City were registered with social agencies as either problem or delinquent youth. Median age of registration was 14 years, and there were three boys for every girl registered. Police and schools were the largest sources of referral, and principal reasons for referral were stealing, truancy, and disruptive behavior.

There are repeated and consistent evidences of sex differences in juvenile delinquency and in the ratios of boys and girls adjudged maladjusted by teachers. The Children's Bureau data on juvenile courts (27) gives a ratio of 4.2 boys to each girl. Teachers rated four boys maladjusted for each girl in Ullmann's (111) study. Bovet (8) observed that "behavior considered by society or by the social environment as so antisocial that it calls for penal action, is . . . five times less in girls than in boys."

Females are found to be at least as maladjusted as males when measures are based either on subjective test data (111) or on self referrals to psychiatric clinics (12). Bovet (8) also found that "in the adult clientele of the open psychiatric and psychotherapeutic outpatient clinics, where most of the patients come of their own free will . . . as many women are found as men."

* Quotation used with permission of the *American Journal of Orthopsychiatry*.

The ratio of boys to girls appearing in court also varies geographically, according to the Children's Bureau data (27). In 1949 boys' cases outnumbered those of girls 19 to 1 in Puerto Rico, but only 2 to 1 in Oklahoma.

Prevalence-figures for other categories of maladjustment than delinquency and truancy are scarce: Fraser (29) reported that in a sample of over 3000 male and female workers in 13 light and medium engineering factories, 10 percent (9.1 percent of the men and 13.0 percent of the women) had suffered from definite and disabling illness: "Neurotic illness caused between a quarter and a third of all absence from work due to illness . . . and a loss equivalent to an annual absence of three working days by every man studied and of six days by every woman. . . . These losses . . . amounted to between a fifth and a quarter of all absence from work, for whatever cause" (29:4-5).*

Measures of Maladjustment

A number of studies have been devised to analyze the process by which maladjustment is recognized. The data may be reviewed from the standpoint of factors associated with the rater (parents, police, teachers, classmates), the ratee, the measuring instruments (tests, scales), and aspects of social performance (truancy, underachievement, drug addiction).

Parents. When a child is referred to a community guidance clinic, Phillips (85) sees the child's problems as mirroring the parents' problems. He has shown striking similarities between main complaints regarding the children and unresolved psychological difficulties which the parents carried over from their own histories. Morris and Nicholas (78) have demonstrated that a communality of personality traits exists among children and their parents. These authors felt that the exaggerated presence of personality deficiencies in the children was due to the effects of cumulative reinforcement arising from the presence of the traits in the parents. It may be questioned, however, whether the data in the aforementioned two studies are evidence of the learning or identification process by which children develop personality patterns, or of the selective factors which determine the course of a family to a child guidance clinic. The significant question may prove to be not, "How did the child get that way?" but, "Why does this child's symptom bother this parent?"

Police. Wattenberg and Balistrieri (116) spelled out two contrasting hypotheses as areas of major concern in the assessment or adjudication of delinquency: (a) Crime is culturally *defined*; we tend to define as delinquent those varieties of behavior which the upper or middle classes do not like. (b) Crime is culturally *determined*; the rate of delinquent acts is actually highest in the lowest socio-economic groups.

* Quotation used with permission of the Controller of Her Britannic Majesty's Stationery Office.

Wattenberg (115) has elsewhere indicated that for an adjudication of delinquency to occur, the young offender must have been caught and also have impressed a series of other people (neighbors, police, court) as having committed an act serious enough to warrant official action. He suggests that delinquency may "represent an adult pattern of reaction to a youngster rather than a pattern of behavior in a young person."

Teachers. Studies of the role of teachers in the identification of problem behavior have been relatively numerous, altho frequently only exploratory and "fact-finding" in character. The influence of experience or proved competence as a teacher on whether a given behavior is regarded as problem behavior may be inferred from studies by Jones (57) and by Slobetz (102). Jones categorized the responses of 100 college seniors majoring in education to 12 problem situations and found that further study to determine the cause was recommended more frequently with problems of truancy, stealing, or temper tantrums, than with daydreaming, timidity, and insecurity. Adjustment of type of work was frequently preferred as a method for dealing with daydreaming, below average ability, timidity, and truancy. Slobetz analyzed the responses of teachers who had been selected by administrators as the more competent in their schools. The selected teachers tended to be female, over 36 years old and with over 10 years teaching experience, and more than one-half were themselves parents. The highest percentage of constructive measures by teachers was reported in connection with withdrawing and recessive behavior, the lowest in connection with classroom decorum. Teachers rated as most serious sex-morality situations and included withdrawing and recessive behavior among the five most serious situations. The most annoying situations were those relating to classroom decorum. The Jones and Slobetz studies together point the way to a need for further comprehensive study on how teacher skill in the evaluation of pupil adjustment (as well as in technics of promoting growth of pupils) either evolves or may be developed.

Stouffer (106) repeated Wickman's (119) study following the original pattern but with variations designed to make ratings by teachers and mental hygienists more comparable. He concluded that the attitudes of teachers have changed from those reported by Wickman and that teachers and mental hygienists are in substantial agreement on the importance of many items. Subjectively manifest behavior problems are rated as more serious by clinicians than by teachers, but recessive personality traits have moved toward the top of the teachers' list of seriousness; further, teachers now consider masturbation less serious than formerly, and enuresis more so. Clark (15) also concluded that his findings differed basically from those obtained by Wickman in that "teachers taking part in this study . . . were more annoyed by pupil behavior which affected the smooth functioning of the pupil group than by behavior which would affect themselves directly." * Sparks (104) found that the rank difference correlation between ratings of

* Quotation used with permission of The University of Chicago Press.

50 items of behavior for "seriousness to future adjustment of child" and ratings for "troublesomeness to teacher" was .05.

Ullmann (111) found that teachers rated most confidently items which came closest to their day-to-day experience with children, namely, work habits; had difficulty with items relating to home or social relationships; and were more "successful" in their efforts to rate the characteristically "acted-out" behavior of boys than the characteristically subjective symptoms of girls, but they felt equally confident of their ratings of boys and of girls. Focusing on items of "objective" behavior tends to show boys as more maladjusted than girls; focusing on subjective behavior tends to minimize the evidence against boys, but teachers have difficulty rating maladjustment that is subjective in its principal manifestations. More recently Bowman and others (10) found that teachers' and peers' ratings are much more highly correlated for aggressive maladjustment than for withdrawn maladjustment.

Children as raters of each other and of themselves. Correlations between self-descriptive (problemnaire and personality test) data and ratings by others is higher in the primary grades according to Bonney (7) and Havighurst and Taba (45) than in the junior or senior high-school grades, as shown by Symonds and Sherman (107), and Havighurst and Taba (45), or at the college level by Powell (87). Above the elementary level both the correlations between two sorts of raters (classmates and teachers) and the correlations among personality tests tend to be moderate (87, 107) whereas correlations between ratings and self-descriptive data tend to be low.

Attributes of the ratee as factors. Data derived from self-descriptive sources indicate that symptoms may be associated with race, sex, rural or urban status, migrant family history, sibling position, intelligence, or popularity (47, 72).

The Measuring Instruments. Ratings as an approach to the measurement of the extent and distribution of social maladjustment assume that behavior can be predicted on the basis of the social stimulus value of the subject, that is, responses which the subject arouses in others. Personality inventories which are answered by the subject himself have also been used both to predict (or assess the amount of) behavior that will occur and to examine the components of a given type of behavior. Schuessler and Cressey (99) reviewed 113 studies, published over a 25-year period, and concluded that when the results are considered chronologically there is nothing to indicate that the personality components of criminal behavior are being established by the method of personality tests. But Hathaway and Monachesi (43) concluded on the basis of *MMPI* results that about 20 percent of a group could have been classified as belonging either to a high or low delinquency rate group. Altho this study throws light on some of the attributes which are associated with proneness to become involved with the police, it also points to the desirability of a study of the comparative predictive efficiency of (teachers') ratings and such scores as the *MMPI* provides.

Monachesi (77) used the *MMPI* in a survey of various delinquent and

nondelinquent populations in Minnesota and found that "delinquent males seem to possess personality patterns that do not differ from nondelinquent males." Variations in practice and facilities available for rehabilitative purposes, and especially urban-rural differentials, suggested that the role of environmental conditions rather than a variety of basic personality maladjustments was of primary significance in the development of delinquency. Freeman and Mason (30) reported a series of attempts at construction of an *MMPI* key to differentiate recidivists from nonrecidivists and showed the collapse of each attempt when cross-validation of keys derived from item analysis was attempted. Lough (68) and Lough and Green (69) reported two studies of the screening of college women to find those who might be in need of counseling. The primary value of the *MMPI* seemed to be to give some insight into the emotional life of the individual; the Washburne S-A Inventory could be used in selecting those to whom the individual form of the *MMPI* might well be administered and used as a clinical technic.

Further efforts to assess certain aspects of social maladjustment by means of psychological tests have occurred as byproducts of recent formulations in personality theory. Gough (38) has suggested that the essential diagnostic element in psychopathy is a deficiency in role-playing ability involving an incapacity to look upon oneself as an object or to identify with another's point of view. Gough and Peterson (39) developed a delinquency scale of 64 items based on role-taking deficiencies and other data and showed, after cross-validating studies, that the instrument had potentially good screening efficiency. While the use of personality inventories developed out of the rationale of psychological theory gives promise of increasing utility in the process of screening populations for maladjusted individuals, the use of both ratings and tests in combination appears to be the wise course in application of present knowledge. Ullmann's (111) study has suggested that ratings give a picture of what society will probably do about maladjusted individuals, and test scores give a picture of what maladjusted individuals will probably do about themselves.

Social Performance. A report by the Citizens' Committee on Children of New York City (14) described some of the difficulties and considerations entering into an attempt to measure the incidence and prevalence of truancy, particularly the task of differentiating truancy from casual absence. This report concluded that for most children truancy "is not the heart of the maladjustment but only the symptom. . . . Many (probably most) truants are not and never become delinquents, but many delinquents first manifest their difficulty in truancy."

Altho scholastic underachievement (achieving in school below expectations based on relevant measures of capacity) has not traditionally been included in reviews of social maladjustment, recent studies have shown that this phenomenon has an etiologic kinship with the more obvious forms of social incompetence and maladjustment. Gilmore (35), as part of a venture to increase the accuracy of prediction of point averages, found from sentence-completion items that the achieving student had a much happier

relationship with his father, a closer identification with his mother, and a marked quality of independence. The nonachiever had poor relations with both father and mother, was more dependent and passive. Similarly, Kimball (59) found that underachieving adolescent boys revealed negative relationships with fathers, and also that their aggressive feelings were a source of guilt and anxiety. Underachievers were less able to give direct, effective expression to their negative feelings than did a control population. Kurtz and Swenson (64) found that among the factors which differentiated "plus" achievers from "minus" achievers were affectionately supportive parents and peer relations which were somewhat more plentiful, and especially more supportive, than those of minus achievers. Pilzer (86) made a Rorschach study of disturbed children who make a good school adjustment and found that as a group they were ambitious and strained to produce, but were unproductive and lacked spontaneity.

The use of narcotics* by juveniles and adolescents became a matter of widespread concern several years after the termination of World War II. The phenomenon has, however, been present for several decades at least; it seems primarily to be concentrated among minority groups in the larger metropolitan centers. The literature dealing with social and psychological factors in opiate addiction for the period 1928-1952 has been summarized in an annotated bibliography by Meyer (73). Most of the recent studies relating to drug use by adolescents have been concerned with establishing the fact of an increase in drug use by the adolescent group or with considering programs of action rather than with analyzing the social and psychological processes involved in drug use. The exceptions are discussed below.

Use of marihuana, a nonaddicting drug, is generally conceded to be much more widespread than the use of opiates. Just prior to World War II, a major research on the use and effects of marihuana was undertaken in the city of New York (112). Use was found to be extensive among young adults in the areas of Negro and Latin-American population. Most of the adolescents who used marihuana were those who had left school and who were without steady employment. Marihuana smoking was seen as part of the pattern of sociability and conviviality and as affording temporary feelings of adequacy in meeting disturbing situations. There was no evidence of severe personality disturbance among users, nor were the effects of the drug upon the individual seen as contributing to major crimes or to other markedly deviant behavior.

Zimmering and others (122) studied intensively a group of adolescent heroin addicts admitted to Bellevue Hospital in 1951, concluding that in the premorbid personality of the young addict the following character traits predominated: lack of aggression, strong attachment to the mother, poor object relationships, omnipotent striving, and a tendency to regress. To a considerable extent these tendencies may be regarded as stemming

* The writer wishes to acknowledge the contribution of John Clausen, Ph.D., Chief, Socioenvironmental Laboratory, National Institute of Mental Health, for his assistance in the preparation of material pertaining to research in drug addiction.

from the conditions of life of the minority groups from which the boys were drawn. Following drug use, antisocial behavior appeared to take more dangerous forms and drastic personality changes of a schizoid nature were widespread.

More severe psychopathology was noted by Gerard and Kornetsky in an unpublished paper available to the present writer. They studied 24 adolescent addicts at the Public Health Service Hospital at Lexington, Kentucky, and found that many of these older adolescents showed marked schizophrenic tendencies; all presented a picture of extreme dysphoria and problems of sexual identification. As in other studies, drug addiction was found to serve the function of facilitating social intercourse thru relief of tension as well as offering more complete withdrawal from the problems of everyday life.

Research of broader scope than any previously undertaken among young drug users is currently in progress both in Chicago (61) and in New York (94). Both studies are investigating the processes whereby drug use is established and the factors associated with continuance to the point of addiction.

Theories and Classifications of Maladjustment

When passing from a symptomatic to a conceptual level, the scope of the term maladjustment becomes more difficult to define, and many works dealing with personality do not employ the term maladjustment at all. It is more frequently to be found in the literature of sociology, education, and mental hygiene. From the standpoint of personality theory (and the practical consequences attached thereto) the issue appears to be whether maladjustment shall be described in terms of symptoms or in terms of personality structure. The period covered by this REVIEW has been marked by advances in both relevant personality theory and in the development of concepts for grouping behavior disorders.

Havighurst (44) has described as a form of maladjustment the failure by the individual to master the "developmental tasks" of life, with resultant unhappiness for the individual, disapproval by society, and difficulty with later tasks. Jahoda (53) has suggested that a "combination of three criteria be used for determining the mental health of an individual: (a) active adjustment or attempts at mastery of his environment as distinct from inability to adjust and from his indiscriminate adjustment through passive acceptance of environmental conditions; (b) unity of his personality, the maintenance of a stable, internal integration which remains intact notwithstanding the flexibility of behavior which derives from active adjustment; and (c) ability to perceive correctly the world and himself" (53:220).*

The relation of psychological theory to research in maladjustment is illustrated by McQuitty's (70, 71) attempts to use factor matrices as a

* Quotation used with permission of Josiah Macy, Jr. Foundation, New York, N. Y.

means of constructing a measure of mental health which would discriminate consistently between community persons and hospital patients.

The "self-concept" as defined in recent years has been a central element in much research on maladjustment. Combs (16) and Snygg and Combs (103) have defined the well-adjusted person in terms of the adequacy of his self-organization. A maladjusted person is characterized by many threatening perceptions, and his maladjusted behavior occurs largely as a result of his attempts to deal with the threats to which he feels himself subjected. Taylor and Combs (110) hypothesized that a well-adjusted person ought to be able to accept more unflattering statements about himself and found that children with favorable scores on the *California Test of Personality* checked more derogatory statements about themselves than did a group with unfavorable scores. Lindgren (65) found that among college students the *California Test of Personality* correlated so highly with the K scale of the *MMPI* as to raise a doubt as to its value as a measure of adjustment, and he suggested that it measured culturally acceptable defensiveness or "fear of nonconformist tendencies" rather than "personal and social adjustment." Ullmann (111) pointed out that "essentially different pictures of the adjustment of children are obtained whenever children's adjustment is assessed through judgments by raters (peers or teachers) and through judgments from self-perceptions." Webb (118) also found low correlations between composite group ratings for individuals on five social traits of varying degrees of acceptability to the individual and ratings assigned by the individual to himself. In accounting for the "considerable disparity between the individual's concept of himself and the group's concept," Webb hypothesized three self-concepts: the objective self, the self-evaluated self, and the social self. Calvin and Holtzman (13) showed that discrepancy between group-ranking and self-ranking correlated significantly with three *MMPI* scales, but it is to be noted in this study that self-rating enters into the dependent variable and also into the criterion scales. Roberts (92) found that ratings on concept of self are not indices of emotionality unless the subject gives a low rating on acceptance of self, or unless he indicates a discrepancy between concept of self and the concept of the ideal self. Norman (83) also found that linear correlations between self-ratings and ratings by others tended to be low, but individuals near the middle of a scale of acceptance had the highest scores on insight and self-other identity. The relationship between these qualities and acceptance tended to be curvilinear.

A number of essentially inductive approaches to the problem of syndrome identification in children have been made during the past decade. Havighurst and Taba (45) were able to differentiate empirically five groupings of adolescents which they named self-directive, submissive, adaptive, defiant, and unadjusted. An attempt to arrive at a classification of institutional delinquents as an aid in treatment was reported by Williams (120) who proposed the following categories: situational problems, personality difficulties, the pseudo-social group, the asocial, and medical problems. Jen-

kins and Glickman (55, 56), Lorr and Jenkins (66), and Lorr, Wittman, and Schanberger (67) have reformulated these groupings by evolving syndromes from clusters of intercorrelated traits for child-guidance clinic cases. Five factors or patterns have been discovered: (a) socialized delinquency, (b) the over-inhibited syndrome or internal conflict, (c) unsocialized aggressiveness, (d) brain damage, and (e) the schizoid syndrome or reaction. Behind these primary factors, Lorr and Jenkins have observed, appear to be two orthogonal second order factors, "a factor of rebellion characteristic of both the unsocialized aggressive and of the socialized delinquent, and a factor of maladaptation tending toward disorganization of the adaptive process and most characteristic of the schizoid. The rebellion of the socialized delinquent is distinguished from the rebellion of the unsocialized aggressive in that the former is adaptive, the latter maladaptive" (66:19).* Mullen (79) has compared pre and postadolescent truants with similar groups of inschool disorderly nontruants and has found a cluster of traits in the truant group resembling the cluster which Jenkins has labeled socialized delinquency. The disorderly nontruants bear a resemblance to the unsocialized aggressives.

With the delineation of these typologies there emerges a need for genetic studies to determine at what developmental levels these syndromes can first be validly discerned, at what levels they become stabilized, and to what extent the syndromes may reflect differences in phases of development rather than durable traits of personality. A question may also be raised as to whether truancy in eight-year-olds has the same meaning as truancy among 14-year-olds. Galvin (32) factor analyzed the personality traits of 100 elementary- and 100 secondary-school boys. He found two polar factors in elementary boys: timidity versus dominance, and will versus antisocial tendency. With the secondary-school boys, these traits were found to be broken up into differentiated clusters. Even at the elementary-school level, certain clusters resembled syndromes found among psychotic patients.

The fundamental significance of this factorial approach appears to be in the possibility of linking patterns of maladjustment to a general system of concepts useful in explaining such seemingly diverse phenomena as schizophrenia, brain-injured behavior, and delinquency. Whereas impairment of the adaptive process is greatest for the first two, it is essentially unimpaired in socialized delinquency. Jenkins' socialized delinquent may be related in personality structure to the "adaptive" person of Havighurst's grouping, i.e., when adaptive persons move in an atmosphere of social disorganization, their delinquent behavior may be regarded as having come about thru the learning of such patterns.

Attributes Associated with Maladjustment

The discussion of prevalence of maladjustment in the foregoing sections depended upon assumptions regarding the varieties of behavior which

* Quotation used with permission of the *Journal of Clinical Psychology*.

bore a potential relevance to the chapter topic. Burt and Howard (11) reviewed the history of the term "maladjustment" and then factored 24 variables on 273 cases judged by teachers as maladjusted. They concluded that cases of maladjustment can hardly ever be regarded as forming a single, relatively homogeneous type and that maladjustment may show itself in a number of alternative ways. Gurvitz (41) has reviewed developments in the concept of psychopathic personality and summarized the present situation as being marked by progress from the point of view that the psychopath is a biologically inferior type to the recognition that it is the psychological makeup which is aberrant. Bovet (8) arrived at the position that delinquency is a bio-psycho-social phenomenon in which the common psychological denominator is the feeling of insecurity.

Himmelweit and Petrie (48) compared 41 clinic children with 47 controls and found that differences seemed to exist at all levels of behavior: in expressive movements, in motor coordination, and in general mode of reacting to the environment. Neurotic children made a smaller number of attempts to deal actively with an aggressive situation, used more critical, unhappy sentence-endings, made fewer aggressive responses to provocative situations, and swayed more on a test of static ataxia.

Eysenck and Prell (24) have reported the development of a test which appears to differentiate normal from neurotic children. They have isolated a factor of neuroticism, and they feel that objective tests may be of considerable practical use as screening devices to isolate children in need of psychiatric attention.

Hall and Crookes (42) have shown that the majority of anxiety-patients tend to do no worse than normals on verbal and performance tasks. Obsessionals appear to do better on tasks on which their rigidity or obsessive adherence to an established pattern are assets, and to do worse where adaptive learning is required. Hysterics appear to have the opposite pattern; they adjust easily to "progressive learning" tasks, eliminate errors with little difficulty, and recover easily after failure.

Glaser and Chiles (36) studied a reformatory group of 60 youthful habitual offenders of average or superior intelligence and good physical health. Altho the experimental group was extremely heterogeneous on most psychological measures, they tended to be homogeneous in that they were characterized by immaturity of psychosocial development.

The relation of scholastic and occupational interests and abilities to adjustment has been studied by several investigators. Ash (3) found that schooling reported by delinquents bore little relationship to measured scholastic ability. Holmes (51) compared 60 delinquent boys with a group of skilled workers and found that in general-mechanical aptitude and certain skills, such as spatial relationship, the delinquent boys were distinctly above the comparison group, but their mechanical comprehension was low. He concluded that delinquent boys appear to have aptitudes which justify their training for the trades. Altus (1) found that the total number of activities liked by Army illiterates showed a linear correlation of .39 with a 36

point oral measure of adjustment. Feather (25) observed among college men that normals tend to reject the social service and literary occupations as classified by Kuder, while maladjusted reject the mechanical, computational, and scientific occupations.

Glueck and Glueck (37) made a classic study of the similarities and differences between 500 delinquent boys and 500 nondelinquent controls with respect to sociocultural, somatic, intellectual, and emotional-temperament factors. The delinquent group was made up predominantly of boys committed to correctional schools plus a number who had not been institutionalized but had court records of continuing offenses. Each delinquent was paired with a nondelinquent on the basis of age, ethnic origin, and total intelligence quotient. The nondelinquent group was so drawn as to be comparable to the delinquents in the neighborhood and the experimental and control groups came in equal proportion from areas of similar delinquency rate. The Gluecks found the delinquents distinguishable from the nondelinquents in certain physical, temperamental, attitudinal, psychological, and socio-cultural features, and they found a consistently greater proportion of conflicts among the delinquents, but the manner in which the delinquents typically resolved such conflicts appeared most meaningful. The delinquents tended to resolve mental conflicts by extroversion, the nondelinquents by introversion. The Gluecks also attempted to devise a formula based on their data for the prediction of delinquency.

The Glueck study has been subjected to critical discussions by Anderson (2), Gault (33), Reiss (91), and Rubin (97) on the assumptions involved in matching experimental and control groups; by Shaplin and Tiedeman (100) on the use of the same data from which part-scores are derived to study the validity of their sum. Reiss (91) and Shaplin and Tiedeman (100) have pointed out that the prediction tables developed by the Gluecks are not designed for a prediction situation. Objections based on the matching technic employed by the Gluecks are addressed primarily to the arbitrary suppression of potentially significant complexes of variables. Taft (108) observes that the Glueck research seems to be limited by the relative neglect of the influence of social situations outside the home, and "it certainly does not prove the point that family tensions are the deepest causes of delinquency."

Developmental Aspects of Maladjustment

Bowlby (9) concluded that when deprived of maternal care, the child's development is almost always retarded—physically, intellectually, socially—and that symptoms of mental illness may appear. While some children are gravely damaged for life, he felt it by no means clear why some succumb and some do not. Spitz (105) found that racial differences have little significance, if any, for emotional development in the first year of life, but differences in emotional climate are of the highest significance. Wallin and Riley (113) obtained a significant positive association between pregnancy-

adjustment scores of mothers and infant-adjustment scores in the case of the second child, but not where there was only one child. The authors suggested that this may have come about in the case of second children because negative attitudes were greater and the compensations in motherhood fewer. Kent (58) studied 23 twin children referred to a child-guidance agency as maladjusted and found that the attitudes of the mothers were qualitatively different for the two children. The mothers and the children themselves were ambivalent in the matter of twins being separate entities from each other and yet being exactly alike. The feeling of twin symbiosis accentuated the problems.

Beres and Obers (4) reported clinical observations on a group of 38 adolescents and young adults, all of whom were placed in an institution for varying periods of time up to four years and subsequently in foster homes, and all of whom required supportive casework. The authors concluded that children who have been deprived of a continuous and satisfactory contact with an identification-person suffer a distortion in psychic structure, impaired ability to tolerate frustrations, learning disturbances, and disturbance in ability to form attachments.

Schoeppe, Haggard, and Havighurst (98) found great differences between boys and girls in crucial factors affecting success in developmental tasks among adolescents. The authors observed that good peer relations had primarily an affect base, and "the importance of proper identification with the same sex-parent highlights the entire analysis." They also observed that "if the adolescent is to accomplish the developmental tasks required in his society, it is imperative that he master his impulsivity and accept himself, so that he can mobilize his energy to deal effectively with the social and cultural forces which impinge upon him" (98:48-49).*

Rosenzweig and Rosenzweig (95) found that the maladjusted child is distinctly less able to control aggressive responses in frustrating situations than is the well-adjusted child. Their data show that patients in a child-guidance clinic have consistently lower adaptability than normals, and the patients attain comparable degrees of adaptability only gradually and belatedly. Elsewhere, Rosenzweig, Fleming, and Rosenzweig (96) reported that extropunitive responses are gradually replaced during childhood by impunitive and intropunitive responses and that excusatory responses are applied with greater frequency to both the self and others as age advances. Fleege (28) found that greater insight into the role of the self in personal-social difficulties accompanies increasing age among adolescent boys.

Family, Social and Economic Factors

The relative contributions of family experience and of social situations outside the family in the etiology of maladjustment have been the central problem of a number of studies. Ellis and Beechley (22) found among

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child-guidance clinic patients that size of family and type of disturbance were qualitatively related. Children from the larger families were distinguished for their lesser emotional disturbance, relatively low intelligence, and the poorer economic status of their homes. Children from the small families were distinguished for the severity of their emotional disturbance, their poor schoolwork, high incidence of broken homes, and superior economic status of their families.

Feelings of rejection and reactions thereto are different for normal, neurotic, and delinquent children, according to Jackson (52). Wittman and Huffman (121) similarly found that delinquents rated their parents as indifferent or rejecting; control children rated theirs in the middle range; and psychotic (schizophrenic) youth rated theirs at the oversolicitous, hyperemotional end of the scale.

Eisenstadt (20) studied immigrant youth in Jerusalem and found that the main differences between delinquent and nondelinquent groups seemed to lie in the structure and organization of the group as illustrating basic differences in the way they solve psychological and social problems arising from the discontinuity between family and community. Delinquent group formation is minimized where permanent, recognized social roles can be formed and personal channels of communication with the adult culture can be developed. Kobrin (60) has developed the proposition that urban areas of high delinquency are characterized by a duality of conduct norms rather than by a dominance of either a conventional or a criminal culture. Reiss (90) found that efficient prediction of delinquent recidivism is obtained from the use of items as predictors which are measures both of the adequacy of personal controls of the individual *and* his acceptance of or submission to social control. Wattenberg and Balistrieri (117) observed that in predicting recidivism, socioeconomic indices had greater value in the case of gang members, and family indices in the case of nongang members.

It is difficult to draw the line between studies of the effect of social stratification upon social experiences of young people generally and those which deal more specifically with the outcomes that fall in the range of maladjustment. Hollingshead (49) has documented the position that "the social behavior of adolescents appears to be related functionally to the positions their families occupy in the social structure of the community." * In a more recent effort, Hollingshead and Redlich (50) investigated the proposition that types of psychiatric disorders are connected significantly to an individual's position in the status structure. This study may be criticized because the data used to test the proposition were prevalence rates, which measure the number of cases of a disease in being at a particular time, rather than incidence figures, which measure the number of new cases of a disease occurring within a specified time. Additional studies of the effects of social stratification have been reported by Cook (18), Elias (21), Green (40), Kuhlen and Bretsch (63), and Neugarten (81).

* Quotation used with permission of John Wiley & Sons, Inc.

Nye (84) reported that adolescents are, on the average, better adjusted to parents in the high than in the low socio-economic level families, and that significant socio-economic differences remained even when the factor of broken homes, size of family, employment status of mother, and rural or urban residence are held constant.

Wattenberg's (114) data showed that regularity of church attendance was associated with lessened probability of recidivism, and he observed that church attendance was part of a way of living which generally reduces tendencies toward juvenile misconduct.

Ellis and Beechley (23) reported data which showed Negro patients attending clinics in New Jersey to be more emotionally disturbed, more poorly adjusted to their teachers, and more socially maladjusted than the white patients. They came from homes where economic status was lower, homes more often broken, and the parents less likely to refer their children for child guidance care.

Prevention and Treatment

For convenience, treatment programs for maladjusted persons may be divided into two categories, depending upon emphasis: (a) direct efforts made with the individual, as by casework or psychotherapy; and (b) efforts to modify the situation for groups, as by curriculum revision, milieu therapy, and the use of the controlled environment. In the former category, experiments using controls are becoming more numerous with the development of experimental designs and statistical methods suitable for small groups and for individuals. Miller (75) has given a concise summary of the present status of experimentation in psychotherapy, and the use of quantitative methods for studying the psychotherapeutic process has been well illustrated by Rogers (93). Among studies in which comparison data are presented for groups undergoing diverse experiences is that of the Harlem Project (82), which reported upon the activities of three schools. In one of the schools, three-fourths of a group of girls rated as unmanageable on entering the program made greater gains than a control group which received only clinic services but were not in the specially developed school program. Powers and Witmer (88) reported the Cambridge-Somerville study, which compared two groups of 325 problem-boys carefully matched on a complex of variables. Each boy in the experimental group was made the recipient of a program of sustained, friendly counseling, whether or not an acute problem was momentarily active; the control group received only that attention incidental to the usual community life. Altho the experiment was set up to test the hypothesis that delinquency can be prevented by establishing a sustained, friendly ego-ideal for boys in trouble it is open to question whether the provision of female counselors with very heavy case-loads satisfies the experimental requirements; so that the failure of differences to emerge between the groups on an index of social adjustment can hardly be taken as disproof of the hypothesis. The St. Paul experiment (26)

showed that if adequate community services are effectively coordinated, much of the problem-behavior exhibited by children can be prevented or modified or checked in its course. This was demonstrated by the fact that the index for arrests and the index for court actions dropped well below the index figures for comparison-areas during the period of the experiment. Gersten (34) has compared 22 institutionalized delinquents with a like number of institutionalized controls on changes following 20 weekly group-therapy sessions. Measurable improvements occurred in intellectual performance and school achievement, and probable gains occurred in affective and social spheres. Havighurst and others (45) and Bowman and others (10) have reported a comparison-group experiment being conducted as a community youth-development program to test the hypothesis, "An average American community with its own resources of persons and finances can significantly improve the mental-health level and the extent of the use of the talent of its citizens when interested persons in the community are given information and training in scientific methods of human development" (10:3).

Among reports made in narrative and descriptive terms or in operational statistics is the previously mentioned study by Beres and Obers (4), who stressed the importance of a durable identification-figure for the child's psychic development. Freud and Dann (31) described an "experiment in nature" in a report of experiences with six orphans, five of whom had never formed an attachment to a mother-figure. They were neither deficient, delinquent, nor neurotic but had found an alternative placement for their libido in a high degree of mutual identification, such as has been known to occur in twins. Redl and Wineman (89) described the psychodynamics of delinquent behavior in members of an experimental group of 10 boys in a residential treatment program. Bettelheim (5) reported case-study data based on the residential treatment of emotionally disturbed children. A group of four separate projects established to promote the adjustment of school children has been made the subject of an evaluative report by a committee of psychiatrists (17). Mitchell (76) presented a composite summary of successful and unsuccessful experiences of a detached group worker in making contact with, gaining acceptance, and influencing the activities of teen-age gangs.

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CHAPTER V

The Auditorily and Speech Handicapped

LOUIS M. DI CARLO and WALTER W. AMSTER

DURING the past decade, research in hearing and speech impairments has attained prodigious proportions. A good deal of the impetus for this research was provided by the armed forces in the development of the Army and Navy rehabilitation programs for hearing and speech casualties. The Army and Navy provided funds and utilized key institutions and personnel in developing instrumentation, materials, and procedures for successful prosecution of their programs. Even after the conclusion of the war, the Army and Navy not only manifested continued interest in such research and service, but also made available to institutions and individuals the bulk of this research which formerly fell into restricted categories. Concomitantly, educational and service agencies throughout the country expanded their facilities for exceptional children and adults (2, 4). Because of the extremely large number of contributions appearing since the last review by Johnson and Gardner (69), selection could only include a limited number of these references.

Some of these contributions cover wide areas of research themselves. The research of Davis (25), Licklider (81, 82), Miller (95, 96), von Békésy (141), and Wever (149) has penetrated the frontiers of psycho-acoustics, psychophysiology, and other audition phenomena to amazingly profound depths. Jacobson (66) reported the informational capacity of the human ear depended little on its dynamic range. He further considered methods of informational match to the ear, and calculated the average capacity of 0.3 bit/sec. for an individual cochlear fiber. Davis (24) proposed that the *Gabor Information Diagram* approximated the characteristics of the human ear better than the wave-form or frequency-spectrum methods of representation. Miller and others (97) compiled a two-volume bibliography in audition covering approximately 5500 references. Bangs (7), Curry (22), Elliott (37), and Leutenegger (79) accumulated bibliographies in speech after laryngectomy, adolescent voice changes in males, stuttering, and aphasia, respectively. Weissberg (146) collected and classified extensive audio-visual materials on speech and hearing disorders. The trend to deal with hearing and speech impairments as mutually inclusive entities is represented by the redesignation of the American Speech Correction Association to the American Speech and Hearing Association in 1948, and also by the greater number of existing hearing and speech clinics and centers in 1953 (2).

Basic Considerations

Ever-increasing research has not only revealed necessary interrelationships between the different specialties but also has focused attention on the

developmental continuum. Barker (8), Di Carlo (29), Johnson (68), and Miller (95) have stressed that hearing and speech handicaps involve a failure to consummate the communicative process. Irwin (64) found in his research on infant speech development that velar and glottal sounds accounted for approximately 98 percent of the consonant sounds during the first months of infant life. These findings do not substantiate earlier biographical speech-sound development data. At the end of two-and-one-half years the articulation profile closely approximated the adult profile. Irwin also reported (63) early development of plosives and fricatives with decreasing fricatives and increasing nasal sounds with age. In addition, Irwin (65) evaluated a series of variables—age, sex, race, sibling influence, feeble-mindedness, intelligence, occupational status, institutionalism, and brain damage—affecting speech development in the infant and the young child. McCurry and Irwin (87) also indicated a future trend in the study of word approximations in the infant. The experimental procedures employed by Irwin and his workers have proved fruitful and reliable.

McCarthy's (86) comprehensive review in children's language development emphasized the social function of language interactions. Werner and Kaplan (148) analyzed protocols of 125 children in terms of correctness, conventionalization, signification, grammatic structurization, symbolization, rigidity, and auto-critical behavior. They defined genetic levels dynamically, embracing principles of spiral development, analogous functioning, functional variability, and stability.

Templin (140) reported partial results in her study concerned with the development and interrelationships of certain language skills. She employed a cross-sectional and modified longitudinal study. By two and one-half and three years, substantial development of articulation had occurred in children. Period of greatest growth occurs between two and one-half and four and one-half years but continues until eight years of age. By the age of seven, 95 percent of the children acquire satisfactory articulation. Templin's data on comprehension and use-vocabulary for older age levels differ from other findings.

These studies unequivocally manifest that many variables and complexities operate in speech and language development. Synthesis of these variables must occur within a framework which expedites and facilitates language interactions. Altho the area along the developmental continuum where lack of synthesis becomes critical remains speculative, nevertheless deterrence of these variables under certain conditions may interfere with the establishment of the communicative process.

Differential Diagnosis

The realization that hearing and speech impairments are not single clinical or pathological conditions has culminated in the search for more effective differentiating criteria and methodology. A range of etiological

factors may cause comprehension and communication disabilities. Carrell and Bangs (21) summarized symptomology, etiology, and treatment goals for children they designated as having idiopathic language retardation. Some children with apparent lack of speech and comprehension abilities possess two common characteristics: (a) failure to respond to auditory stimuli, and (b) failure to produce speech. Failure to respond to auditory stimuli or produce speech may precipitate incorrect diagnosis of deafness or what some examiners define as "congenital aphasia." Knapp and Gold (77) investigated the galvanic response as a method of diagnosis of hearing disorders. Bordley and Hardy (14) have refined the method and made extensive clinical application of it. Strauss and Lehtinen (135) reported research with perceptual-motor tests for differentiating exogenous brain-injured nonmotor-handicapped children from endogenous mentally retarded children and described a syndrome characterizing these children. They also established educational procedures for training them. McKay (89) observed the responses of deaf children on perceptual-motor tests employed by Strauss and Lehtinen (135). The deaf children performed superiorly to a matched sample of normal and mentally retarded children. The behavior of deaf children on these tests differed from that of the brain-injured children reported by Strauss and Lehtinen. Karlin and Strazzulla (75) reviewed speech and language problems of mentally deficient children. Their study included 50 children whom they classified into three groups on the basis of intelligence quotients. They investigated the developmental sequence, laterality, and speech and language problems. They reported these children exhibited a delay in developmental sequence more pronounced in higher intellectual functions including language, and also brought out relationships between degree of mental deficiency and handedness. Sugar (136) considered the diagnosis of "congenital aphasia" inadequate and misleading and suggested elimination of this designation in favor of delayed or arrested speech development. He also proposed an anatomical and physiological approach as a more meaningful method of investigation. These studies reviewed as a whole contraindicate a trend towards labeling and indicate the need for extending research in this area. Nevertheless, enough information is available to the careful examiner to provide the matrix for more thorough examination and diagnosis.

The Auditorily Handicapped

Precise definition of the hearing-impaired individual has continued to provoke conflicting classifications. Silverman (130) suggested that the basis for confusion lay in the different frames of reference employed by the different investigators. He followed the broad classification recommended by the Committee on Nomenclature of the Conference of Executives of American Schools for the Deaf. They defined the deaf as one whose sense of hearing is nonfunctional for ordinary purposes of life, the hard of hear-

ing as one whose hearing, while defective, is functional with or without amplification. The terms "functional" and "ordinary purposes of life" represent relative designations. Lewis (80) defined deafness in terms of degree of hearing loss. Zero to 20 decibels represent no, or slight, hearing loss; 20 to 40, hard of hearing; 40 to 70, partially deaf; 70 to 100, profoundly deaf. Neither classification can yet be accepted without relating the terms to some criteria of social adequacy.

Incidence and Educational Provisions

The exact number of individuals with hearing impairments in the United States is not available because no comprehensive nationwide census has been completed. The *American Annals of the Deaf* (2) reported for the period ending October 31, 1952, a total of 13,996 children in 78 public residential schools for the deaf in the United States. The oral method of instruction was used with 9341 pupils; nonoral, 1232; and combined, 3398. Data for the aural method and the number of group and individual hearing aids in use were not clear-cut. Most of these schools provided pre and vocational training in four or more trades. Padden (109) listed six categories of occupations taught in various schools. The oral method of instruction was the only method for the 1878 pupils of the nine public day-schools. This number does not include numbers of group and individual aids utilized. The nine public day-schools offer little or no vocational training. Of the 3771 pupils in 152 public day-classes, 3635 were being taught by the oral method; 1436 group and individual hearing aids were in use. Figures dealing with vocational training were not completed. Silverman (130) estimated 1.5 to 2 million children in the United States have defective hearing. Gardner (43) sent questionnaires to 6556 county- and city-school officers who reported 99,735 pupils, from a population of 8,401,107 tested, with defective hearing. This would indicate a little better than 1 percent incidence. His data also revealed 10,418 or approximately 0.22 percent of the children reported receiving lipreading instruction in a population of 4,845,884, and 1841, or approximately 0.04 percent, using individual hearing aids. Watson and Tolan (143) calculated, on the basis of different surveys that 125,000 children with hearing losses of 45 db or more required the use of hearing aids. The prevailing figures reported strongly emphasized need for a nationwide census. These figures also show many children with hearing impairments are receiving instruction in public schools with little or no facilities provided for them.

Etiology

Attempts to arrive at one etiological factor for hearing-loss have been abandoned. Hopkins and Guilder (56) conducted a longitudinal pedigree investigation on a group of Clarke School deaf children. The study was carefully conducted over a period of years, but no simple etiological factor

was isolated. Hopkins (55) further considered congenital deafness and other defects following German measles. She found many of the children of mothers contracting German measles in the first three months of pregnancy were born with deafness and other handicaps. Lobel (84) reported hearing loss due to nutritional deficiency. Jordan's (72) study indicated that allergy plays an important part either as a cause or contributing factor in deafness. Baron (9) dealt with vitamin therapy in the treatment of deafness and found it beneficial. Guild (47) reached the conclusion that previous ideas of the effect of nasopharyngeal lymphoid tissue on hearing and the effect of nasopharyngeal irradiation needed to be revised. Lierle (83) advocated more active otological follow-up participation. The trend these studies advocate is early diagnosis and treatment.

Testing

Ewing and Ewing (39) described a number of methods and materials for testing the hearing of young children. They investigated children's responses to sounds between birth and five years of age. They felt that children's responses to sound developed sequentially in four well-defined stages. Reflex responses appeared early but decreased with age, while voice became a better means of assessing children's hearing with experience and learning. Hirsh (54) presented much of the research on measurement of hearing during the last decade. Di Carlo and Gardner (32) investigated group pure-tone (modified form of the Massachusetts test) technic for testing large populations. Bordley and Hardy (14) have demonstrated the usefulness of PCSR audiometry with young children.

Intelligence

Measurement of the intelligence of deaf children still remains a controversial issue. Kirk and Perry (76) conducted a study comparing the *Ontario* and *Nebraska* tests for the deaf. They decided the *Ontario* to be the better test if the Binet examination has any relation to learning. They observed the *Ontario* consumed less time, was easier to handle and score, and cost less to administer. MacPherson and Lane (91) administered the *Hiskey*, *Advanced Performance Scale*, and *Randall's Island Series* for younger children. Their results revealed high reliability among the tests. Birch and Birch (12) used the *Leiter International Performance Scale*, performance portion of the *Wechsler-Bellevue*, and *Draw-a-Man* tests. The deaf made lower scores on the *Leiter* and *Draw-a-Man* tests. They suggested the use of the three tests together presented a more realistic profile of the children than any one alone. Oleron (108) administered the 1938 edition of the *Raven's Progressive Matrices* to 246 deaf subjects between 9 and 21 years of age. His results disclosed a marked inferiority and slower mental development for the deaf. Subjects who became deaf after five and six years of age were superior to those who were born congenitally deaf or acquired deafness before ages five and six. Residual hearing did not influence per-

formance markedly. Oleron proposed the view that deafness impairs capacity to use abstract forms of intellectual behavior. Oleron augmented his study with another inquiry (107) into the conceptual thinking of deaf children. Here, too, he also found the deaf inferior. His explanation for this poorer performance differed from Goldstein's (45) concrete attitude or McAndrew's (85) concept of rigidity. Oleron concluded that the difficulty resulted from retarded development rather than real incapacity. McKay (89) found deaf children inferior in conceptual behavior. Templin (139) was also interested in qualitative aspects of mental activity of the deaf child. She attempted to ascertain the effects upon reasoning of impaired hearing and residence in an institution. She tested the hypothesis that both hearing impairment and residence in an institution placed some restriction on the environment. She gave the *Deutsche* questions to measure causal explanation, the *Long and Welch Test of Causal Reasoning* and the *Brody Non-Verbal Abstract Reasoning Test* to 624 normal and 303 children with defective hearing. Analysis of her data substantiated the hypothesis that an intrinsic factor of hearing-loss influenced reasoning unfavorably but rejected it for the extrinsic factor of residence in an institution. Research on the intelligence status of the deaf continues to produce conflicting points of view, but a definite trend appears to be operating in the dissatisfaction with existing tests and the quest for new ones.

Preschool Training

The introduction of better technics for early detection of hearing losses raises the important question of preschool training. Educators have given this problem considerable thought. The John Tracy Clinic in Los Angeles provides correspondence courses to guide parents of deaf children in beginning the educative process. Clarke School for the Deaf accepts children four years old. New York State residential schools permit enrolment at age three. The California State Department of Education has published a booklet (16) containing important information about hard-of-hearing children. The University of Illinois Press has made available to parents of deaf children a publication (62) to help them begin early training. Lewis (80) reported 76.3 percent partially and 41.3 percent profoundly deaf children trained at the hospital were able to attend public schools; 15.7 percent partially deaf and 5.8 percent profoundly deaf attended private schools; 8 percent partially deaf and 52.9 percent profoundly deaf children were placed in residential schools for the deaf. Of 59 partially deaf and 75 profoundly deaf children exposed to inadequate teaching, 49.1 percent of the partially and 1.3 percent of the profoundly deaf could attend public schools; 27.1 percent partially deaf and 1.3 percent profoundly deaf went to private schools; 23.8 percent partially and 97.4 percent profoundly deaf entered residential schools. There exists today a trend to early discovery and provision of preschool training on the basis of needs. The conflicting points of view concerning pre-

school training for children with impaired hearing have not been synthesized or reconciled.

Educational Placement

Di Carlo (28) outlined a multi-facet program for hearing-handicapped children within the framework of a public-school organization. O'Connor (106) discussed the placement of deaf and hard-of-hearing children in schools and classes for the deaf. O'Connor recognized the differential programs required to meet the needs of these two groups, but he also recognized the possibility that children with seriously impaired hearing may function in public schools if adequate educational differentials are provided in an integrated curriculum. Stevenson (134) considered the problem of placement but believed schools and classes for the deaf better met and served the needs of these groups. Fiedler (42) presented a "point of view of the Vassar staff." Eleven hearing-handicapped children and their parents underwent a four-week implementation program at the Vassar Institute for Family and Community Living. The presentation submits traditional methodology to serious scrutiny. Nevertheless, use of terminology, number of subjects, and limited period of implementation render generalizations very tenuous. MacPherson (90) examined the status of mentally-deficient, hearing-handicapped individuals. Educational placement presents a difficult task. MacPherson observed that instructional facilities for them might be expanded and that teachers handling these individuals be trained in both the education of the deaf and mentally deficient.

Communication Skills

Speech Perception. The trend today in the education of hearing-impaired individuals provides for teaching all the linguistic skills as communication tools. Carhart (18) studied the contribution of certain frequencies to speech intelligibility. His research indicated that the three critical frequencies for intelligibility included 512, 1024, and 2048 cycles. The subjects had developed speech and language. Whether these data are equally applicable to congenitally deaf children needs to be tested. Hudgins (58), Numbers and Hudgins (105), and Quick (119) explored speech perception of deaf children. These investigators compiled several lists from the *PB* lists to test speech perception of pupils at Clarke School. Most of the subjects increased their intelligibility scores when listening and watching simultaneously. Ewing's results (38) are in essential agreement with these. Consideration of the sense modalities as band-widths and hearing-loss as comprising possible noise levels in the framework of information theory may prove valuable, altho the problems of storage and memory may still resist formulation.

Speech. Carr (19) augmented Irwin's (63, 64, 65) work in an inquiry into the spontaneous speech sounds of deaf children. Classification of sound schema used in teaching speech to deaf children did not embrace the sequential development of their spontaneous sounds. Hudgins (60) continued to emphasize that the acquisition of intelligible speech by deaf children must begin with basic breath control and voice production; that the establishment of adequate speech-breathing coordinations precede speech; that modern hearing aids may prove helpful in attainment of better speech by the deaf. Magner (92) contributed methodology and materials for teaching beginning speech. Peterson (113) investigated acoustical gestures in the speech of deaf children, and Potter, Kopp, and Green (116) offered "visible speech" as a possible aid in the teaching of speech.

Hearing Aids and Auditory Training

The impact of the modern hearing aid has challenged both educators and research workers. Davis and others (26) completed an important experimental study of design objectives of hearing aids. Silverman and Harrison (131) submitted a progress report on the National Research Council group hearing-aid project, while Hudgins (57) discussed hearing-aid equipment in schools for the deaf. Carhart (17), Johnson (67), Waterman (142), Weaver (144), and Wedenberg (145) presented rationales, materials, methodology, and results for auditory training. Weaver (144) and Wedenberg (145) cited gains made by children thru auditory training. Waterman (142) advocated early auditory training but considered electrical hearing aids without compression amplification dangerous for children. Hudgin's (59) progress report of auditory-training experimentation at Clarke School suggested that auditory training holds promise when systematically and consistently presented.

Speechreading. Reid (122) examined relationships between lipreading and other skills in an attempt to obtain some quantitative measurements. She concluded lipreading ability could not be quantitatively measured nor could proficiency in it be predicted from length of training. Morkovin and Moore (99) advocated teaching speechreading thru motion pictures. Di Carlo and Kataja's (33) analysis of a motion picture lipreading test revealed the test to be too lengthy and to contain many nonfunctional items. Their results also substantiate Reid's (122) findings concerning prediction and length of instruction. Research in this area has not kept pace with research in some other areas in the education of the hearing-handicapped.

Language and Reading. For hearing-handicapped children, reading and language should develop concurrently. Groht (46) reiterated teaching language on the basis of spontaneity and needs for expression rather than a priori lesson plans and precise order. Reay (120) compared the compositions of deaf and hearing children describing a motion picture.

Di Carlo (30) suggested language instruction for deaf children must be *a posteriori* as well as *a priori*. Instruction should be functional, adapted to emerging needs, spontaneous, and oriented toward providing a feeling for language as communication.

Pugh (117) appraised the silent-reading abilities of hearing-handicapped children. While she found retardation, she believed that these children's silent-reading ability could be substantially increased. Bennett (10) and Numbers (104) postulated reading success for deaf children contingent on the establishment of reading as a pleasurable process, vocabulary and grammar development, and the choice of stimulating and properly graded materials.

Vocational Services and Adjustment

Lavos and Jones (78) studied records of 56 workers in industry during the war. They generally concluded that the deaf made average or better records than normals. Williams (150) observed the establishment of more efficient cooperation between schools and rehabilitation agencies. Shortley (129) reported services offered by state-federal programs for vocational rehabilitation for the deaf and hard-of-hearing. A definite trend exhibited by this activity reveals a growing concern of cooperating agencies to provide satisfactory job training and placement for individuals with hearing impairments.

Personality

Appraisal and the evaluation of the personality structure of hearing-handicapped individuals present no unequivocal profile. Judgments concerning their personality configuration range from normal to psychotic (29). Heider (51) investigated and reported the social behavior of deaf and nondeaf children in an experimental play-situation. Deaf children played on equal terms with each other while one of the pair of hearing children tended to dominate. The hearing used language to control the situation while the social environment for the deaf was less sharply oriented. Heider (50) observed that adjustment problems of the deaf involve the self-concept. McAndrew (85) studied the responses of the deaf to a task and found definite rigidity and an inability to alter nongoal attainment behavior. Altable (1) administered and interpreted Rorschach protocols of 45 deaf-mutes. Their responses reflected color and shading shock, inferiority and sexual complexes, lack of precision with rigidity of thinking, absence of plan and order, and failure to exercise intellectual control over effective impulses. Di Carlo and Dolphin (31) concluded that psychological data on social and personality development of children with impaired hearing was inconclusive. They suggested research requires better criteria, instruments, controls, and technics, and

that a frame of reference be established which will permit insight into the psychodynamics of hearing-loss and the interaction of hearing-loss and personality development.

The Speech Handicapped

Incidence

Johnson and Gardner (69) reported an incidence of approximately 10 percent or 3.5 million children with speech handicaps. A later estimate (4) indicated an incidence of 5 percent for children between the ages of 5 and 21. An additional 5 percent were considered to have relatively minor speech and voice problems. These estimates were based on a school population of 40 million children. The report classified the incidences in the following manner: functional articulatory impairment 3 percent, or 1,200,000 children; stuttering 0.7 percent, 280,000; voice 0.2 percent, 80,000; cleft palate 0.1 percent, 40,000; cerebral palsy 0.2 percent, 80,000; retarded speech development 0.3 percent, 120,000; impaired hearing (with speech difficulty) 0.5 percent, 200,000.

Functional Articulatory Impairment

Sayler (124) discovered in testing 1998 children from Grades VII thru XII that the mean number of articulatory errors decreased slightly with grade progression. Distortion errors predominated. Mase (93) matched 53 fifth- and sixth-grade boys with articulatory difficulties with a control group judged as having normal articulation. He studied auditory acuity, auditory memory span, coordinations of muscles controlling articulation and gross musculature, sense of rhythm and tonal memory, and auditory articulatory discrimination. He found that none of the variables clearly differentiated the two groups. He suggested further study of rapidity of lip movement and auditory acuity. Reid (121) used 38 children with articulatory deviations and a control group of 41 children to investigate the relationship of a series of developmental factors to functional articulatory impairment and their effect in a speech-re-education process. Speech-sound discrimination was the only factor that appeared to have predictive value for articulation ability or improvement in articulation. She concluded that some children develop faulty speech production which persists because the children are compelled to meet communication demands before maturation of speech skills is completed.

Hansen (48) investigated speech-sound discrimination phenomena in adult groups with and without articulatory errors. He employed a variety of discrimination tests and found no significant differences among groups. Speech therapy did not increase auditory discrimination significantly. Fairbanks and Spriestersbach (41) investigated the rate of movement of

oral structures. Their subjects included 60 young adults, 30 females and 30 males, who were classified on the basis of superior and inferior consonant articulation. They found small differences between groups excepting for the rapidity of lip movement, which was more rapid for the superior male speakers. This finding on an adult population agrees with Mase's (93) results on a children's sample. Another possible etiological factor in the development of articulatory handicaps is the child-parent interpersonal relationship. Wood (155) was interested in the personality adjustment of parents of children who had articulatory difficulty. He concluded a relationship existed between the articulatory difficulties of children and the parents' maladjustment. The maladjustments were maternally centered, but the children of the mothers who received counseling made greatest improvement in articulation during therapy. Henrikson (52) considered the validity of Wood's use of a scale to measure improvement in articulation based on the assumption that sounds occurring in children's speech are distributed with equal frequencies in their possible positions. His research disclosed no justification for this concept.

Spriestersbach and Curtis (132) summarized a series of studies concerned with speech-sound discrimination and the inconsistency-consistency factor in misarticulation for children in kindergarten thru Grade VI. Their analysis revealed that children tended to be more inconsistent than consistent in their misarticulation of the *r* and *s* sounds, but exhibited greater inconsistency of misarticulation for the production of the *r* sound. The *s* and *r* sounds were more easily and more often correctly produced in blends than in the single. An implication of this research led to the concept that correctness of articulation in a particular phonetic context might be related to better discriminatory ability in that context. The greatest correlation existed between the omission type of error and discrimination. The trend indicated by these studies reveals the need for diagnostic and therapeutic procedures based on a consideration of speech-sound discrimination in specific phonetic contexts, and more detailed tests should be utilized in determining the inconsistency-consistency relationships. Johnson, Darley, and Spriestersbach (70) have contributed a manual for implementary testing, diagnosis, and prognosis of speech and hearing disorders. Baccus and Beasley (6) presented a framework for group therapy stressing the beneficial effects of group interaction, nonsegregation on the basis of speech symptoms, and retraining of speech impairments within the framework of the communication act. Johnson and others (71) prepared a publication capable of wide application, not only in public-school classroom situations, but also basic to others concerned with the speech-and hearing-handicapped.

Voice

Curry (22) summarized pertinent research dealing with adolescent voice change. Adolescents tended to lose control of voice with accompany-

ing voice "breaks" approximately an octave in extent. Huskiness and other accompanying symptoms precede voice change. These changes were found to occur at a mean chronological age of 14 years. The relationship of voice change to pubic development and various skeletal measurements has been considered. Fairbanks (40) investigated preadolescent voice phenomena of seven- and eight-year-old boys and girls. Acoustic analysis of recorded primary-level reading passages showed voice breaks similar to those reported for the adolescent male groups (22) for all sex-age groups in Fairbank's inquiry. In addition, he found that for the 12 pitch characteristics studied, the sex-age groups were random samples from the same population. He suggested that this type of experimentation be continued at successive age levels thruout childhood.

McDonald and Baker (88) reviewed a series of studies which employed acoustic, anatomical, and X-ray technics dealing with the characteristics of nasality. They concluded that "nasality-free" speech is possible of production without complete velo-pharyngeal closure. Williamson's (151) report on the diagnosis and treatment of 84 individuals with nasality substantiated this concept clinically. In less than 5 percent of the persons, velar-occlusion exercises were recommended. He found the following factors existing among his subjects: poor breath control, chest and throat tension, tense jaw and limited oral cavity, and high back position of tongue. Peacher (110) found vocal abuse to be the primary etiological and perpetuating factor for 16 adults with contact ulcers of the larynx. Extreme tension of the body and speech musculature, improper pitch level (usually too low), glottal plosive attack, explosive speech, and hoarse voice quality were associated with the pathology. Vocal restraining proved effective and contraindicated surgery. Williamson (152) eliminated hoarseness thru voice training in the majority of his group displaying similar symptomatology without organic pathology. Duncan (34) administered the *Bell Adjustment Inventory* to a group of 23 individuals with hoarse or harsh voice quality and a control group with normal voice production. The scores of ten of the experimental group and three of the control group indicated unsatisfactory home adjustment. She provided a program of group therapy stressing a mental hygiene approach. The trend to gain insight into the possible relationships between personality and voice problems is very desirable, but the need to employ reliable and valid instruments in the evaluation of personality under controlled conditions appears mandatory. In Sherman and Linke's (128) study, 35 auditors judged the harshness of voice quality of 15 adults on a seven-point scale. Sherman and Linke had their subjects read a series of passages containing various vowel types. Their analysis indicated that the high vowels (shorter in duration) were perceived as less harsh than low vowels (longer in duration). This finding is contrary to clinical assumption. Lax vowels were perceived as less harsh than tense vowels. This finding is consistent with clinical experience. They recommended further experimentation employing a more complete classification and greater range of vowels ac-

cording to the duration factor, and also the inclusion of concomitant physical measurements. Several investigators (74, 88, 128, 152) have indicated dissatisfaction with the existing lack of agreement on classification of voice disorders. Establishment of a widely acceptable classification system should prove beneficial in further research.

Stuttering

Recent research continues to display interest in the psycho-dynamics of stuttering behavior and a decreasing concern with hereditary and physiological factors (13, 68, 98, 153). Nelson, Hunter, and Walter (101) studied the incidence of stuttering among 69 pairs of identical and 131 pairs of nonidentical twins. They found stuttering occurring in 10 of the identical pairs and in 30 of the nonidentical pairs. In 28 of the 30 non-identical pairs, only one member of the pair stuttered, but of the 10 identical pairs both members of 9 sets stuttered. On the basis of these findings they postulated a possible hereditary influence. The criteria for diagnosis of stuttering become important for this type of evaluation. Hill (53) evaluated a series of studies dealing with the supposedly physiological and etiological factors of stuttering. On the basis of his analysis he could not postulate a unique set of physiological variables responsible for stuttering behavior. In this same report he reiterated his conclusions concerning the influence of bio-chemical factors on stuttering. On the basis of his investigation he could not attribute causal relationship to any special bio-chemical factors.

Schuell's (126) investigation to explain the reasons for greater incidence of stuttering in males permitted her to hypothesize that contingent factors affect males more adversely in our culture and that the demands of our culture present the male with a greater number of frustrating experiences and conflicting values. She found that the male is slower in physical, social, and language development; is prone to more illnesses, death at birth, accidents, punishment, feelings of insecurity, and rejection. These frustrations and insecurity feelings may provoke greater hesitancy in the communication situation. Such hesitations are usually negatively evaluated by the key person in his interpersonal relationships. He interiorizes these mal-evaluations, which result in tension and anxiety and provide the basis for stuttering behavior. Despert and others (27) employed social, psychological, physical, and interview measures to evaluate stuttering behavior in children. They reported common occurrence of primary anxiety and concurrent physiological disturbances with obsessive-compulsive traits predominating. They believed that the pressures of neurotic mothers at critical stages in the speech-development process might interfere with the acquisition of satisfactory communication. Quarrington (118) administered the *Rosenzweig Frustration Test* to a group of 30 adult stutters and could not find any basis for supporting the psychoanalytical concept of a basic character-neurosis for

the stutterer. Moncur (98) interviewed groups of mothers of stuttering and nonstuttering children to identify differentiating environmental conditions. Reassessment of his data with respect to parental domination suggested that parents of stutterers exhibited more dominant behavior in child-parent interpersonal relationships. Bloodstein's (13) research disclosed that conditions decreasing stuttering behavior involved anxiety reduction, contingent on decreased punishment and distraction from stuttering, and resulted in the stutterer's decreased effort to avoid nonfluency. Bloodstein's hypothesis is in agreement with Johnson's semantogenic formulation (68). Eisenson and Horowitz (36) reported the frequency of stuttering to increase with greater degrees of propositionality. Wischner (153) devoted considerable study to the phenomena of stuttering behavior in the framework of a reinforcement learning theory. His review of the research considered adaptation behavior, anticipation phenomena, expectancy, and anxiety as basic constructs in his theoretical formulation. His hypothesis suggested that feared words which arouse anxiety-tension reduce that tension when they are spoken, but also reinforce the stuttering. Sherman (127) applied the *Iowa Rating Scale of Stuttering Severity* to obtain rank-order positions corresponding to the severity of stuttering. The results of this study suggest a possible usefulness of the scale as a clinical and research instrument.

Cleft Palate and/or Cleft Lip

The trend of the team approach utilizing the different specialties has been stressed in the diagnosis and treatment of cleft lip and/or cleft palate (100, 115). Phair (115) investigated the incidence of cleft palate in the state of Wisconsin. She found one case of cleft palate in every 770 live births and attributed her higher figures to differences in technics. Greater incidence was found among older mothers and where children were three or four pregnancies removed; among twins, premature births, and among males. Discrepancy between parental ages and rural-urban domicile did not appear to be influential factors. A more extensive geographical investigation of possible etiological factors might reveal significant information. Morley (100) presented information dealing with embryology, anatomical and psychological considerations, development of modern surgery, classification, diagnosis prognosis, and therapy programs for the rehabilitation of individuals with cleft palate and/or cleft lip. Harkins and Baker (49) considered the role of prosthesis where surgery failed or was contraindicated; best results were obtained where surgery was never attempted. Kantner (74) presented an operational framework for diagnosis and prognosis of the communicative efficiency of individuals with cleft palate. He stressed methods for determining degrees of nasality and the critical functioning of the velo-pharyngeal closure, not only for sustained blowing but for speech production. He further emphasized awareness of general speech and language retardation and functional articulatory components often concur-

rent with the pathology. McDonald and Baker (88) discussed three major problems encountered in cleft palate speech: hypernasality, nasal emission, and misarticulation. They concluded nasality to be more associated with resonance factors than with velo-pharyngeal closure. They postulated a critical oral-nasal cavity relationship, development of high oral pressures in the production of plosives and fricatives, and a general tendency to elevate the mandible and tongue during speech. Buck (15) employed X-ray technics and statistical analysis with an experimental and control group of 20 paired individuals. The experimental group had unilateral clefts of the palate and lip. The control group consisted of normal subjects. X-rays were taken both during phonation and for the rest position. Buck concluded that the group with cleft palate showed retardation in maxilla and mandibular growth, did not differ significantly from the normal group in tongue retraction when structural differences were accounted for. His findings concerning the tongue height in the oral cavity for the group with the cleft palate did not substantiate the hypothesis presented by McDonald and Baker (88). These studies raise the question of the most optimal age for the intervention of surgery.

Carrell (20) considered cineradiographic techniques as possible means for fruitful evaluation of velo-pharyngeal closure. He completed a cineradiographic film illustrating views of normal and post-operative cleft palates during phonation. This technic offers much for the investigation of structural anomalies.

Masland (94) suggested kymographic procedures for investigating intra-oral and nasal pressures recorded simultaneously as a means of studying cavity-relationships in cleft palate.

Cerebral Palsy

The meeting and cooperation of the specialties is nowhere more clearly exemplified than in the diagnosis, treatment, and rehabilitation of cerebral palsied children. A house-to-house survey in Schenectady County, New York, in 1948 suggested an expected incidence of cerebral palsy for New York State of 8000 children (102). This calculation agrees with the American Speech and Hearing Association Committee on the Midcentury White House Conference (4), estimating incidence of 0.2 percent or 80,000 children for the country. A number of studies on neuromuscular dysfunction dealing with etiology, diagnostic classifications, role of allergy, drugs, surgery, oxygen insufficiency, and other factors in cerebral palsy have been reported by various investigators (73). Taibl (138) concluded the *Raven's Progressive Matrices* to be an effective instrument in evaluating intellectual potentiality of children with cerebral palsy. He reported no significant differences between the intelligence of his athetoid sample and normal children but a significantly statistical difference for his spastic group. Arnold (5) found adaptations of the *Leiter Scale*, *Porteus Maze*, and the *Binet Scale* useful in testing children with cerebral palsy. Wolfe (154)

evaluated the physical, intellectual, educational, and speech status of 50 children with cerebral palsy. He reported that the spastic group exhibited the least amount of speech disturbances; that all his athetoid subjects and 80 percent of the ataxic group presented involvement of respiration. Cyprensean (23) investigated the breathing and speech coordinations and judged intelligibility of 25 normal and 25 cerebral palsied children with speech impairments matched on the basis of age, sex, and intelligence. The children who obtained higher intelligibility scores performed breathing and speech coordinations closely resembling those of the normal speakers. Hyman (61) and Rutherford (123) studied the speech performance of children with cerebral palsy. The results of their studies indicated the necessity for different therapy programs for the different groups. Bijou and Werner (11) found brain-injured mentally deficient children superior to nonbrain-injured mentally deficient children in range of words correctly defined, quality of definitions, modes of expression, and completeness of meanings. The trend today includes expansion of research into many aspects of the cerebral palsied child's behavior. Much remains to be learned and integrated into an effective program of rehabilitation.

Aphasia

Recent investigations have led to questioning the propriety of the term "congenital aphasia" as a classification for speech and linguistic disorders resulting from brain injury. Nielsen (103) considered the complexity of the syndrome and recognized the various involvements as differentiating between levels of disabilities. He did not believe brain injury to children under age five resulted in aphasia. Children from five to 10 suffered little language impairment; after age 10 the disabilities increased with age and severity of injury. Sugar, Chusid, and French (137) reported the existence of a second motor cortex in the monkey. Penfield and Rasmussen (111), employing electrodes on human cerebral cortices, discovered a number of other places besides the frontal lobe which would cause speech arrest when electrically stimulated. Penfield and Welch (112) described the function of the supplementary motor area of the cerebral cortex. These concepts necessitate a reassessment of the use of the designation "congenital aphasia." Eisenson (35) developed a manual for examining aphasia and related disturbances. Goldstein (45) discussed language and language disturbances of the brain-injured person and described certain dynamics of their behavior. He presented the concepts of concrete attitude and catastrophic behavior as characteristic of these individuals and intimated the relationship between language disturbances and severe personality breakdown. Wepman (147) summarized a good deal of the thinking concerning the localization and nonlocalization controversy, and accepted the non-localization point of view as being a more fruitful basis for developing a framework of continuous rehabilitation. He also accepted the following nomenclature: expressive aphasia, receptive aphasia, expressive-receptive

aphasia, global aphasia, agnosia, apraxia. Schuell (125) investigated the significance and retraining technic for residual auditory disability (perceptive) which persisted even tho the individual was not diagnosed as having receptive aphasia or auditory agnosia. She developed a program for reauditorization training. The necessity for this approach was revealed when the dysphasic subjects were unable to reproduce auditory stimuli beyond a very simple level.

Review of the research compels awareness of the diversification and complexities involved in the total rehabilitation of individuals with hearing and speech impairments. The research also emphasizes the continued need for the cooperation and interaction of the specialties, and the urgent need for training competent therapists to serve the handicapped. Development of satisfactory communication depends upon adequate hearing and speech. Factors that impair hearing and speech disrupt the efficient acquisition of linguistic skills, including reading and other related language activities. Limited communication avenues impose serious restrictions on the intellectual, psychological, and social mobility of the individual and jeopardize the formulation of adequate personality structure.

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CHAPTER VI

The Visually Handicapped

LEE MEYERSON

THE literature on visual impairments has been treated extensively by reviewers and bibliographers. Ingram's (50) 1941 review of the field was the last to appear in this journal, but readily available summaries and interpretations by others have appeared elsewhere (3, 17, 40, 64, 66, 85, 103). The present review, therefore, has been planned largely as a critical examination of selected problems. A number of references to general works and to current sources have been included, however.

General Works

Hathaway (39) published a new edition of her useful discussion of problems and procedures in educating the partially-seeing child. Her recommendations appear to reflect wide experience. Few of the recommendations are supported by evidence, however, and their validity is unknown. Galisdorfer's bibliography (34) is a useful guide to additional literature of informed opinion. Two compilations of books in large print (33, 71) are of value to teachers and administrators of classes for the partially seeing.

A comprehensive introduction to problems of blindness may be found in a symposium edited by Zahl (105). This excellent volume pulls together the bulk of what is presently known concerning the history and welfare, education and psychology, and vocational and technological guidance of the blind. A more detailed treatment of diagnostic, counseling, and vocational-guidance problems of adolescents and adults may be found in Donahue and Dabelstein (25). The preschool child is considered in a symposium edited by Lowenfeld (67). These books supplement but do not supplant valuable older treatments (8, 30, 31, 60, 73, 93).

Special note should be taken of the appearance of new revised editions of *The Blind in School and Society* by Cutsforth (20) and *Books about the Blind* by Lende (57). Lende's volume—a carefully selected, precisely annotated bibliography of the educational, psychological, and social literature on blindness—is unique in the entire field of disability and is indispensable to anyone concerned with blindness. It makes possible a rapid review of what is presently known or has been thought about practically every conceivable educational problem relating to lack of vision. Two partially overlapping bulletins (1, 27) listing doctors' dissertations and masters' theses on visual handicaps are useful supplements for students and experimenters. Cutsforth's book (20), first published in 1933, has no superior in clarity of statement, depth of understanding, and wealth of derivable problems amenable to investigation. Its influence on current research and thinking is clearly evident (15, 16, 51, 87).

Lord (62) compiled a useful guide to the sources of indexing and abstracting services of current literature on vision and blindness, and he illustrated the overlap in coverage among them.

Correctable or Partially Correctable Impairments of Vision

Bender and others (7) made detailed case studies of 124 Dartmouth college students who had mild physiological visual impairments. Twenty-nine percent of these were rated by ophthalmologists as having no visual handicap, while the remainder were considered to have small to great handicaps. It could not be demonstrated that the visual condition played any part in the academic aptitude, academic achievement, personality, or motivational pattern of the individual at the time the study was made. No relationship between either the kind or the degree of impairment and any educational or psychological variable appeared. Moreover, among those subjects whose visual impairments were corrected while in college, there were no changes in behavior that could be attributed to the visual correction. The correction of a mild visual defect added to the individual's comfort, but there was no evidence that it produced changes in personality, motivation, or achievement. Visual measurements did not offer an adequate basis for predicting behavior. These conclusions were carefully limited by the investigators to the highly selected, very mildly handicapped college students who were studied. The possible influence of visual impairment upon the formation of personality was not investigated.

Mull (78) used the *Bernreuter Personality Inventory* to investigate the relationship between myopia and introversion in 100 Sweet Briar College students. Forty-seven subjects had normal vision while the degree of impairment in 53 myopes ranged from 20/40 to 20/800. According to the *Bernreuter Introversion Scale* norms, 74 percent of the myopes and 83 percent of the normal-visioned were extraverted. The difference between mean scores of the two groups was not significant. The correlation between degree of myopia and degree of introversion was minus .09, while the correlation between number of years glasses had been worn and degree of introversion was plus .08.

The results of these two investigations are consistent with studies reported previous to 1941. Visual defects, of course, should be corrected where necessary; but, with the possible exception of reading skills, there is no convincing evidence that "normal variations" in vision are directly related to any educational or psychological variable. The burden of proof now lies upon those who disagree.

Partial Vision

Excellent investigations of medical, physiological, and optical aspects of severely impaired vision have been made. Educational research literature, however, is conspicuous by its near absence.

Kerby (54) surveyed by questionnaire the kind and degree of visual impairment in children enrolled in 600 of the 675 special classes for the partially seeing in the United States. She reported 7.8 percent of the 7310 children enrolled had poorer acuity than the 20/200 vision which is usually considered the upper boundary of blindness, while 40 percent had better acuity than the 20/70 vision which is generally considered a criterion for enrolment in sight-conservation classes.

Pintner (80), in the only large-scale investigation that seems to have been made of intelligence, gave individual *Stanford-Binet* examinations to 602 ten- to twelve-year-old children enrolled in sight-saving classes. He found the mean IQ was 95.1. Systematic retesting using enlarged *Stanford-Binet* materials showed that except for a few cases with less than 20/200 vision in the better eye, there was no evidence that the use of the regular *Stanford-Binet* imposed a penalty upon these children. Pintner did not conclude, however, that partially-seeing children were less intelligent than normally-seeing children. In a model of scientific inquiry, he showed there was a steady decline in IQ with increase in age. This may indicate that intelligent children may be returned to regular classes more frequently than less intelligent children who have similar defects. He showed further that 21 percent of the children came from bilingual homes, and bilingualism is known to be associated with lower tested IQ's on the *Stanford-Binet*. There is no reason to believe, therefore, that partially-seeing children are less intelligent than others.

The only published experimental study of the personality of the partially seeing yielded a similar finding. Pintner and Forlano (81) reported that 442 children enrolled in sight-conservation classes obtained scores on the *Pupil Portraits Test* and the *Aspects of Personality Test* which were not significantly different from scores obtained by visually normal children.

Glueck and Glueck (36) had an ophthalmologist inspect 500 matched pairs of delinquent and nondelinquent boys for strabismus, nystagmus, myopia, hyperopia, astigmatism, eye injury, and other visual defects. There were no significant differences between the two groups. The authors concluded, therefore, that impaired vision is a noncausal factor in delinquency.

It is evident that despite oft repeated assertions that impaired vision influences educational and psychological behavior, there are only theoretical reasons for believing that this is true. There has been little research comparable to the many studies that have been made of the hard-of-hearing on the intelligence, academic achievement, behavior, and personality of the partially seeing. The few studies that have been published offer no support for the belief that partial vision has any effect or significance other than medical and physiological. It is probable that crude, insensitive, and inadequate methodology accounts at least in part for these findings. In the investigation by Glueck and Glueck (36), for example, the eyes of the subjects were only "inspected," not examined. Critical evaluation of Pintner and Forlano's findings must consider not only the limitations of paper and

pencil tests of personality but also Kerby's (54) important rediscovery that almost one-half of the children enrolled in sight-conservation classes may not be partially seeing.

Enough is known of the basic requirements for good methodology in this field (3) to permit great optimism concerning the tremendous advances in knowledge that are presently within our grasp. There is also a better supply of trained personnel than ever before. Lack of adequate sponsorship, lack of financial support, and perhaps lack of interest in research on the part of administrators responsible for sight-conservation classes (87) would appear to be the major stumbling blocks to the replacement of opinion by fact in this area.

Blindness

Some major advances in our knowledge of blindness have been made since 1941.

Facial Vision

Perhaps the outstanding achievement has been the ending of more than 200 years of argument, speculation, anecdotal reports, and methodologically deficient research concerning "facial vision," or the ability of the blind to perceive obstacles. A brief review and summary of this problem, which has attracted no less than 14 theories, is most readily available in Hayes (41).

Building in part upon fragmentary and inclusive data obtained in the past, teams of investigators at Cornell University and at the University of Texas appear to have placed some of the final nails in the construction of a neatly packaged solution to this problem.

The structure of all the investigations has been similar. Subjects who were blind, blindfolded-sighted, deaf, or deaf-blind, were (a) placed at varying distances from an obstacle such as a wall, (b) oriented along a path on which an obstacle was placed at systematically varied distances from the starting point, (c) placed in a soundproofed room and allowed to listen over earphones to someone else approach an obstacle, or (d) permitted to listen to tones of differing frequency and complexity as the sound tract moved on a runway toward an obstacle at selected rates of speed.

In a series of experiments in which some relevant variables were systematically controlled, particularly the stimulation of exposed skin and stimulation of exposed ears, the following conclusions were drawn: (a) Stimulation of exposed skin was not a necessary nor a sufficient condition for the perception of obstacles. Aural cues formed the basis for obstacle perception (88). (b) Ten deaf-blind subjects, selected for testing because of their ability to travel independently, did not have "obstacle sense," and

they were incapable of learning it. The aural mechanism involved in the perception of obstacles by the blind, therefore, is audition, and it is not the stimulation of the surfaces of the external ears. Auditory stimulation alone is both a necessary and a sufficient condition for the perception of obstacles by the blind (99). (c) Ten deaf subjects tested did not have obstacle perception and were incapable of learning it (98). (d) At speeds of normal walking, the perception of auditory frequencies of approximately 10,000 cycles-per-second and above is necessary for obstacle perception; the perception of frequencies below 8000 cycles is insufficient. It is the change in pitch perceived as a person approaches an obstacle that is responsible for its nonvisual perception; changes in loudness are unnecessary and insufficient (18). (e) Among all of the 34 totally blind students at the Texas State School for the Blind, 79 percent possessed "obstacle sense" and 21 percent did not. There were large individual differences in ability to perceive obstacles at a distance, but all subjects who possessed "obstacle sense" were remarkably similar in their ability to perceive obstacles close at hand (100). (f) If hearing is adequate, obstacle perception can be learned by blind individuals who do not have it and also by blindfolded-sighted persons (51, 88, 100).

These experiments have been criticized on several grounds by Jerome and Proshansky (51). They pointed out that the initial experimental design (88) did not allow for randomized control trials in which no obstacle was present. This methodological error was corrected in subsequent experimentation, however, and Jerome and Proshansky's own data (51) appear to substantiate the earlier work. Another objection, noted by Twersky (92), is that the work of Di Dea (22) and Laufer (55) shows low-frequency sounds of the order of 250 cycles-per-second to be adequate for obstacle perception also, and that at least with one kind of guidance device for the blind, (the Flashsound), loudness is an important variable. These differences no doubt can be resolved by further research. A more serious criticism is that the experiments were designed to limit or prevent the use of cues such as air currents, odors, ground topography, and temperature changes, which may be quite useful under conditions of everyday living.

These studies have immediate and practical educational application. It has been demonstrated that obstacle perception can be learned and that it appears to depend upon auditory acuity. Obviously, therefore, the first task of every educator charged with teaching essential travel-skills to the blind is to determine the auditory status of his pupils. The blind who have good hearing, especially for the higher frequencies, should be able to learn or to improve their obstacle perception. It is probably a waste of time and energy, as well as a source of heartache and frustration, to use the same technics with those whose hearing is impaired. For the benefit of the latter, further research with the nonauditory cues which facilitate travel is clearly indicated. The studies of the Cornell and Texas investigators, which in many respects are models of scientific investigation, offer both a methodology which can be followed and a shining example of what can be accom-

plished when well-trained investigators make a determined attack upon a critical problem. The encouraging but unfinished war-sponsored research on the development of travel-aids and other devices for the blind (105) is similarly deserving of high praise and respect. It is clear that much more can be accomplished both in this area and in solving other kinds of educational and psychological problems by the timely support of able investigators.

Personality Investigations

Barker and others (3) reviewed 14 studies of the visually handicapped in which a personality inventory was a major tool. Eight of these investigations were made since 1941 (4, 10, 19, 38, 47, 48, 76, 87), and more are in preparation (82). The findings of these personality inventory investigations need not be repeated, for their confusing and conflicting results cannot be generalized beyond the specific population that was studied.

It is important to emphasize, especially for graduate students who often find a personality inventory a royal road to a degree, that the inventory-based portions of these investigations have contributed almost nothing to our knowledge. In each of them we find three or more of the following errors: (a) selection of inventory of unproved validity, (b) inventory items that are of different significance for blind subjects than seeing-subjects, (c) experimental subjects unrepresentative of a larger population, (d) inadequate control group, (e) blindness not isolated from other variables, (f) methodology for blind subjects different from methodology used with seeing-subjects, (g) statistical or other errors in the treatment of data, and (h) data not adequate for independent evaluation.

One universal error, the presence of items of differing interpretive significance, cannot be stressed too strongly. The conditions of life for blind children living in residential schools are markedly different from the conditions which exist for seeing-children living in their own homes. The blind children are both restricted by the regulations of the institution and protected from competition with the seeing. The meaning of their responses cannot be evaluated in terms of norms compiled for noninstitutionalized seeing-children. Consider some items from the *California Test of Personality* (91), a frequently used inventory (38, 48, 87). An institutionalized blind child who agrees that he finds it "hard to keep from being bossed by people" may be reflecting the realities of institutional life; he is not revealing his "self-reliance." Similarly, such a child who says he finds it "difficult to associate with the opposite sex" is not necessarily showing "withdrawal tendencies." Other items not associated with institutionalization are also important. A blind child who cannot distinguish a one-dollar bill from a twenty-dollar bill is well in touch with reality if he feels that he is "not very good at handling money"; he is not revealing anything about his "sense of personal worth." It is clear, too, that the presence or absence of "annoying eyestrain" in a visually handicapped child is not a measure of "nervous symptoms." *The California Test of Personality* is no worse in this

respect than others. Similar items whose interpretive meaning is different for the child with impaired vision than for the normally seeing child appear in every personality inventory examined by the present writer.

Social Maturity

Maxfield and Fjeld (72) reported that the mean social quotient on the *Vineland Social Maturity Scale* of 92 visually handicapped children was 85.5 ± 29.3 , with a range from 26 to 163. Visually handicapped children appeared to master social-competence items from a fraction of a year to as much as a year and one-half later than normally seeing children.

Inasmuch as the subjects of this investigation differed so greatly in age, race, intelligence, degree of vision, freedom from other handicaps, and institutionalization, it is not possible to generalize the findings to the universe of the visually handicapped. The social quotient (SQ) reported is about 20 points higher in mean and in standard deviation than earlier social maturity studies of the blind, but it is in general agreement with a bar graph presented by Hayes (42) showing that 300 "babies," half of whom were blind from retrolental fibroplasia, obtained a mean SQ of 80.8 ± 26.4 on the *Maxfield-Fjeld Adaptation of the Vineland Scale*.

Of greater importance is the fact that Maxfield and Fjeld made an item analysis of their findings and developed a revised scale appropriate for use with the visually handicapped. One desirable effect of the revision was to increase the number of behavior areas sampled and to decrease the size of the step between items.

It is evident from the fact that some visually handicapped children were able to obtain SQ's as high as 163 that impaired vision does not necessarily impose social immaturity even when the social-maturity scale contains numerous items that are mediated primarily by vision. It may be anticipated that the Maxfield-Fjeld social-maturity scale for the visually handicapped will eliminate items which require vision for successful performance and substitute items of equal social-maturity level which can be mediated thru other sensory modalities such as hearing and touch. More adequate measurement of the social maturity of visually handicapped children will then be possible. Experimenters who plan to use a social-maturity scale will wish to see Doll's new book (23).

Interview Studies

Two interview studies of newly blinded soldiers (21, 96) and one study of blind students (87) have appeared. Only the last will be considered here.

Sommers (87) studied the relationship between the adjustment of 50 blind adolescents and the attitudes of their parents. She found that economic, physical, and emotional security in early life tended to determine the personal and social adjustment of her subjects. Lack of such security

or parental overprotection had detrimental effects. The great majority of mothers interviewed showed well-defined conflicts in their attitudes and relationships to their blind child, and nearly all gave the impression of bewilderment and frustration. Sommers believed these conflicts arose from feelings of guilt. Nevertheless, good adjustment in the blind subjects was invariably related to accepting parental attitudes. Maladjustment in the child did not appear to arise from blindness itself but from differentiating social attitudes, especially on the part of the parents. Maladjustment in the parent was related to psychological make-up, marital relationships, and own adjustment to life.

This important study has been deservedly praised by almost all reviewers, including the present writer (3). It must be cautioned, however, that altho the argument is plausible and a fine beginning has been made, the conclusions have not been proved. The sources of maladjustment in blind adolescents cannot be said to have been found. This is still an open question that requires additional research of similar high quality.

Some areas of uncertainty may be indicated. The subjects were reasonably well described, altho it is not clear that all of them met the stated selection-criteria. Among the 50 parents, a volunteer group who may have had different characteristics from the nonvolunteers, 28 were rated as poor or destitute; none were wealthy. Twenty-two families were rated as having little or no cultural or educational interests. This does not sound like a normal population. It would be a significant and revealing finding if parents of the blind generally were demonstrated to fall in the depressed socio-economic position occupied by this sample. The representativeness of the experimental group, therefore, is open to question.

More serious in an interview study of this sort are the ratings of behavior which the reader must accept or reject according to his faith in the clinical judgment of the investigator. Case data are notoriously difficult to handle concisely. However, if it is possible to classify, it should also be possible to define the criteria upon which the classification is based and to state the distribution. The investigator did not always do this.

In assigning the psychological meaning of the child's blindness to the parents, Sommers stated that there were four major categories: (a) blindness as a symbol of punishment, (b) fear of being suspected of having a social disease, (c) feelings of guilt due to transgression of the moral or social code or to negligence, and (d) blindness in a child as a personal disgrace to the parents. No criteria or distribution are given for these judgments. The author does offer brief excerpts from interviews, but it is not always clear that these quotations have the meaning assigned to them. Fear of being suspected of having a social disease is not evident in the following quotation: "We cannot understand why she was born this way. We are all healthy and normal. There is no record of physical defect in our family." An extensive history of the same case given later reveals that the parent was speculating about the influence of drugs and emotional upset during pregnancy. It is also open to question that all attitudes expressed by the

parents were encompassed by the fourfold classificatory scheme given. The fact that six parents were later rated as showing "utter" acceptance and 11 parents "clear" acceptance of their blind children indicates that blindness may also have less negative meanings than those reported.

The substance of the study was the conclusion that the adjustment of the blind adolescent is directly related to the attitude of the parent, but the statistical data do not appear to support this conclusion. The value of this study may be found in the penetrating, skilfully marshalled qualitative data and in the theoretical arguments that are presented. Perhaps this is as it should be at the present stage of our knowledge. The statistical method is only a tool. In the absence of theoretical and conceptual clarity, it will not transform ignorance into knowledge. From a practical standpoint, it is evident that Sommers' work has provided ample justification for educational programs with parents of the blind. It is ten years since her study was completed, however. Additional studies along similar lines are urgently needed.

Experimental Studies

In a theoretically sophisticated study of high quality, McAndrew (69) tested the hypothesis that psychological rigidity is a function of isolation from the objective environment. Inasmuch as blindness is believed to limit contact with and control over the environment (65), McAndrew hypothesized that blind children would show greater psychological rigidity than seeing-children on tests of satiation, level of aspiration, and restructuring by classification. Her data offer substantial evidence that institutionalized blind children show greater rigidity than normally seeing children living in their own homes. Since institutionalization was not controlled, it cannot be determined whether the observed rigidity was a function of blindness or of institutionalization. Nevertheless, this is an exciting pioneer study. It deserves numerous replications with improved methodology. Educationally, its implications are clear. If psychological rigidity is undesirable, every effort which decreases psychological isolation of the blind and increases commonality with the seeing is highly desirable.

Another pioneering study of great potential fruitfulness was made by Jervis and Haslerud (53). They induced frustration in blind, blindfolded, and seeing adolescents by ridiculing them for not being able to solve unsolvable puzzles. Both physiological and verbal responses of the blind subjects were said to differ significantly from the responses of blindfolded-seeing subjects and of seeing subjects. It was concluded, therefore, that inability to see could not by itself account for the obtained differences in reaction to frustration but was a function of differing social-learning experiences to which blind adolescents are exposed.

This study, as reported in its original form (52) shows evidence of talent in problem formulation and skill in execution of a high order. Unfortunately, the conclusions are destroyed on the rocks of methodological and statistical error. In determining physiological responses to frustration, the

authors tabulated the number of times a subject showed ten kinds of behavior such as flushing, rapid and uneven respiration, sighing, trembling and biting tongue or lips. The χ^2 test was then applied to the total number of such responses for each group, with the variable sample-scores of the sighted and blindfolded groups treated as constants from which to derive the theoretically expected scores for the blind. This procedure results in error (70). More serious, however, is the apparent violation of the basic requirement of the χ^2 test that categories be independent. Many of the physiological indices used would appear to be closely related. The procedure used may be compared to the administration of Form A of an intelligence test to a group of boys and girls, finding the sex difference not statistically significant, and then administering Forms B, C, D, . . . X, summing the results and concluding that there was a real difference!

Methodologically, the authors state that altho the blind were drawn from two separate schools, they were homogeneous in their reactions to frustration. Inspection of the original data (52), however, shows that on the two most divergent items, the blind in School A showed "flushing" 12 times and the blind in School B just once, while "smiling or frowning" behavior appeared once among the subjects of School A and 15 times in the subjects of School B. Such divergencies do not enhance our confidence in the validity of the conclusions. On theoretical grounds, it is reasonable to believe that what was tested here was not the reactions of the blind to frustration but the "newness" of the psychological situation for the subjects (3). Meyerson and Trent, in an unpublished study, tested this hypothesis. They found the differences between blindfolded and nonblindfolded seeing-adolescents in physiological reactions to frustration were statistically significant at the 1-percent level of confidence. These data support the view that blindness was not the critical variable.

A third experimental contribution of great significance was made by Brieland (10) in his study of the speech of the blind. Part of the folklore of blindness is the belief that the blind have poorer speech than the seeing. Older studies which purported to show that 50 percent of blind children had speech defects are still quoted in the literature (94). It is not generally known that such studies listed items like "psychotic tendency" and "negatively suggestible personality" as speech defects.

Brieland made the first methodologically adequate study of this important problem. He matched 64 congenitally blind adolescents individually with normally seeing subjects on the basis of age, sex, socio-economic status, and rural or urban residence. Each subject, wearing dark glasses so that judges had no visual cue to ocular conditions, told a memorized story while his performance was recorded on movie film and on high fidelity voice recorders. Voices and movies were presented separately to 10 university teachers of speech, who rated each subject on seven variables and also made a judgment as to whether the subject was blind. The results showed there were no significant differences between blind and sighted samples in vocal effectiveness, vocal variety, or use of loudness. The blind were judged

superior in pitch modulation, while the sighted received higher ratings on use of bodily action, lip movements, and rapidity of speech. These differences were significant at the 2-percent confidence level, or better. The judges were unable, on the basis of vocal cues alone, to differentiate blind from sighted subjects with better than chance results.

These conclusions are at variance with previously reported research and with the opinions of experts. It would seem important that a replication be done promptly with other samples of subjects in other parts of the country. Institutionalization, which may affect either feelings or opportunity to engage in free bodily movement, should be controlled.

A Canon for Experimenters and Evaluators

No doubt it is apparent at this point that research data are not self-interpreting. Not only in visual-impairment studies but also in the entire field of somatopsychological investigations there is an imperative need for the following canon, or working rule, to be followed in scientific research: *Where a difference is found between disabled and nondisabled samples, the difference may not be interpreted as due to the disability if differences on other significant variables were not controlled.* If such a canon were followed consistently, it would probably be as beneficial in somatopsychology as Mill's Canon has been in logic and Morgan's Canon has been in physiological psychology.

Research Briefly Noted

Some, but not all, of the important investigations on visual impairment which have appeared since 1941 are classified below. Critical, independent evaluation of this work, which cannot be done here, is required for the future maximum growth of knowledge: case studies (14, 35, 95); emotion (32, 90); art (68, 83); braille and talking-book reading (28, 29, 64); motor performance (12); vocational aptitude (5, 45); vocational status (56); projective technics (37, 77, 79); space perception (97); theory and methodolgy (3, 75). Useful compilations of aids for the blind and workers for the blind have also appeared (6, 9, 58, 59, 61, 84).

It will be noted that research on two topics of crucial importance to educators—intelligence and academic achievement—have not been considered in this review. The outstanding work of Hayes (41, 44) in this area cannot be praised too highly. Over a period of more than 30 years he has contributed more data than all other workers together. It does not appear, however, that the data have ever been critically evaluated. Such an important task requires a paper for itself. The need for evaluation may be seen in a recent contribution (43) where it appears that a single tetrachoric correlation coefficient was computed for three separate variables. This is a statistical impossibility. These, and other puzzling data, may be typographical errors or they may be explanable in other ways, but clarification would be desirable.

Summary and Prospect

Blindness is a condition that has a special affinity for individuals who are born "too soon" and live "too long." The amazing strides of modern medicine in saving and prolonging life have resulted in an increasing number and incidence of individuals with impaired vision (2, 11, 89, 104). This is a challenge of tremendous import to education.

Correctable Defects. The search for adequate mass-vision testing procedures continues, but agreement on best methods has not been reached (86). Purely educational research has attracted few investigators.

Partial Vision. Some data on standards for teachers of the partially seeing (102) and current practices in sight-conservation classes (46) are available. Educational and psychological data are generally lacking.

Blindness. Major gains have been achieved, notably in clarifying the nature of "facial vision" and to a lesser degree in understanding the dynamics of personality and adjustment in the blind. Well-designed studies by competent, mature investigators appear to be increasing in frequency.

There is less cause for satisfaction in the continuing tabulations of opinion (13) when they do not lead to solution-oriented research. There is cause for impatience at the slowness of investigators to exploit more fully the values of animal (49), change (74), ecological, longitudinal, and other kinds of experimentation that have proved fruitful in the social sciences; and there is cause for alarm at the poverty of research concerned with educational problems, particularly for the new population of children who are blind from retrolental fibroplasia who may have different characteristics from the blind subjects who have contributed to our present knowledge.

The future outlook is encouraging (82), however, and if investigators rigorously apply the canon for scientific work in this field, there will come a period more fruitful than any we have yet seen.

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CHAPTER VII

The Orthopedically Handicapped

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THE use of the term orthopedic in this review of the literature will be restricted to conditions of bone and muscle deviation affecting upper and lower extremity functions. Descriptions of related physical conditions such as brain injury without motor involvement, cardiopathic disability, and nutritional disorders will not be included in the summaries which follow.

Three research trends may be noted in the literature on the orthopedically handicapped during the period from 1941 to the present: (a) a tendency to restrict investigations to fairly well-defined homogeneous groups of subjects, rather than studying general orthopedic populations; (b) an upsurge of interest in the cerebral palsied; and (c) an attempt to relate research projects to a frame of reference based upon psychological theory. This latter trend suggests that future reviews may list fewer contributions of a minor sort, and that major research undertakings which make use of more sophisticated methods of sampling and analysis will provide a reliable body of information concerning the effects of orthopedic disability.

The Meaning of Orthopedic Disability

A significant theoretical contribution to the literature pertaining to the relationship between physical disability and behavior has been contributed by Barker and others (4). They described the problem essentially in somato-psychological terms. Orthopedic disability, like other severe variations in physique, reduces the social status of an individual to that of a member of a minority group. This marginality tends to produce insecurity and tension; the threat of meeting new and unknown situations leads to embarrassment and failure, and to the development of negative self-image. Their critique of many studies of orthopedically handicapped groups points out the inadequacy of the descriptions of the groups. The authors were primarily concerned with the effect of impairment upon the individual's psychological reactions. Thus, slight attention was paid to the direct impact of disabling conditions upon the organism.

Meyerson (72) similarly interpreted the disabled person's problems in terms of psychological field theory. He pointed out the importance to the handicapped individual of the attitudes of the physically normal majority. Mussen and Barker (76) investigated the verbally expressed attitudes of physically normal college students toward cripples. The results indicated that such attitudes were generally favorable, altho cripples were rated away from the ideal in such traits as social adaptability and self-confidence. However, there appears to be a discrepancy between publicly expressed

attitudes and the negative values which are frequently placed upon handicapping conditions. Lavos (59) surveyed what he described as unfounded objections to hiring handicapped individuals. He interpreted such objections as indicating that employers sometimes seek to rationalize their deep-seated rejection of disabled persons.

Barker and Wright (3) analyzed two important characteristics of the social psychological situation of handicapped individuals in connection with problems of rehabilitation. They indicated that society's devaluation of the impaired individual and his uncertainty and insecurity offer important barriers to be overcome by the counselor. Dreikurs (31) set forth the Adlerian position with respect to the meaning of physical disability, and illustrated the operation of compensation for inferiority in cases of crippled children known to him at the Illinois Children's Hospital School. Barker and others (4) listed 20 mechanisms or explanatory concepts which have been used by clinicians and research workers in their interpretations of the problems of handicapped individuals; many of these theoretical constructs were illustrated by case studies of orthopedically handicapped children and young adults. Hollinshead (51) and Seidenfeld (88) set forth the major problems of disabled individuals in terms of both the direct effects of physical limitation and restriction and the indirect (psychological) effects which result from negative values imposed by society and extremes in parental attitudes.

The orthopedically handicapped individual's acceptance of his disability has been investigated by Dembo, Ladieu-Leviton, and Wright (24). They studied the factors involved in coming to terms with loss (young adult amputees) and showed that acceptance of disability involves changes in the value structure of the person. Once acceptance of loss has been achieved, self-devaluation disappears, and the negative attitudes of the noninjured may become a constructive challenge rather than a threat. Ladieu, Hanfmann, and Dembo, in a related study (58), reported on the attitudes of young adult amputees toward receiving help (toward a physical goal) from the noninjured. Sixty percent of all evaluations of help had negative connotations. Help tended to be acceptable when it was necessary, when it did not interfere with learning, and when it was offered in a way that suggested equality between the injured man and the helper. A further study of the attitudes of disabled individuals dealt with the acceptance of curiosity from the physically normal. White, Wright, and Dembo (98) recorded the evaluations of 100 hospitalized servicemen in connection with this aspect of interpersonal relations. Communication in regard to one's injury was neither fully accepted nor rejected. The subjects admitted to a desire to shield themselves from the questionings of their associates in order to avoid the recurrence of painful memories; on the other hand, they wished to be accepted and understood, and they considered silence to be a poor solution to the problem.

These three studies (24, 58, 98) illustrate the overlapping situations which frequently characterize the adjustment problems of the orthopedically

handicapped. There are constant pulls of acceptance and rejection, and behavior reactions tend to be tentative and unstable. Since these studies define the field, describe the barriers to adjustment, and emphasize the motivational aspects of behavior, they may be considered as examples of topological research; their theoretical frame of reference is Lewinian field theory.

Pintner, Eisenson, and Stanton (82) and Wallin (96) have reviewed the literature on the orthopedically handicapped and have furnished helpful summaries on important aspects of the adjustment problems of crippled children. These contributions, together with Barker and others' (4) survey of the social psychology of disability, provide valuable sources of information with respect to methodology and theory.

Studies of Mixed Disability Groups

Many investigations of the adjustment problems of the orthopedically handicapped have been done on mixed groups of subjects. A small group may include individuals with poliomyelitis, cerebral palsy, joint and bone tuberculosis, congenital anomalies, and cardiac impairment. The studies selected for review below cover investigations of personality structure, social adjustment, intelligence, and educational planning.

Broida, Izard, and Cruickshank (10) used the *Symonds Picture-Story Test* in the investigation of fantasy productions of a group of 30 crippled children; most of the children were orthopedically handicapped. They found that their subjects were deeply in need of social acceptance. Feelings of fear were coupled with striving for social participation, and children who did participate in group social activities experienced guilt feelings. Smock and Cruickshank (90) analyzed the responses of 30 crippled and 30 physically normal children to the *Rosenzweig P-F Study*. No significant difference in either frustration reaction or direction of aggression was found between the two groups. Fitzgerald (35) tested the frustration-aggression hypothesis with 30 crippled adolescents and 30 non-crippled controls. He used the *TAT*, the *Kent-Shakow Form Board Series*, and interviews regarding family relations in order to secure ratings on aggression, reaction to failure, and extremes in parental attitudes. He found the average scores and the variability of the crippled males to be less than for their controls; however, the reverse was true for the crippled females. Apparently disabled males tend to internalize their emotional states when they are unable to carry out a masculine role. The groups did not differ in their reactions to failure; however, the crippled, more than the non-crippled, reported overprotection by their parents.

Cruickshank and Dolphin (22) administered the *Raths Self-Portrait N Test* to 87 children with orthopedic and neurological impairments. There were no differences between the scores of boys and girls, but the cardiac and poliomyelitis subgroups showed more fear reactions than did the cerebral palsied. Characterizing the group as a whole, the need for love

and security and the need to share in decision making were being overmet in these subjects. In a companion investigation (21), the *Raths Self-Portrait N* responses of the crippled subjects were compared with the reactions of 193 physically normal children with similar socio-economic backgrounds. There were no statistically significant differences between the two groups. Findings such as these point up the need for caution in reading meaning into test responses of small populations of handicapped children. What may appear to be characteristic maladjustment may be within the range of normal variation when experimental and control groups are compared. This is particularly true when tests or evaluative devices are used which have not been subjected to thorough investigations of reliability and validity.

Cruickshank and Medve (23) used teachers ratings, sociometric analysis, and a measure of personal mental health to study the social relations of 20 physically handicapped children. About one-half of the group were orthopedic cases. The authors found that intelligence and degree of disability were the variables most clearly related to acceptance in a social group. Levi (61) studied the Rorschach patterns of 100 physically disabled individuals in connection with the prediction of success or failure in the rehabilitation process. Patients who gave a preponderance of anatomy-responses presented difficulties in rehabilitation. Apparently a preoccupation with one's own body represented a "narcissistic withdrawal," and such patients had few external interests. Maximum progress in rehabilitation was achieved by those whose Rorschach patterns indicated a neurotic personality structure, with a high degree of guilt feelings. Using two small matched groups of orthopedically handicapped children, Greenbaum and others (44) studied *TAT* productivity when the Murray cards were used with one group, and Backrach and Thompson's modified cards were used with the other. The introduction of a handicap into the *TAT* pictures failed to produce greater productivity than resulted from the use of the Murray cards; forcing a response to a handicap actually reduced productivity to a slight degree.

Cruickshank (17, 18, 19) obtained incomplete-sentence test responses from 264 handicapped adolescents (over half of whom were orthopedic cases) and 264 nonhandicapped subjects, matched for sex and age. In comparison with the normals, the handicapped children exhibited a greater need and drive toward acceptance and showed a greater number of adjustment patterns which were negative in nature; concept of self, in family and peer relationships, was found to be negatively influenced. The responses of the crippled group were judged to be more immature than those of the normals, and the handicapped group tended to withdraw from social relations. One interesting finding of these studies was that the normal subjects showed better identification with the father, while the crippled group was more closely identified with the mother person.

Levi and Michelson (62) made a clinical study of ten adolescent boys who were orthopedically handicapped. They found that the *Rorschach*,

TAT, Wechsler-Bellevue, SRA Youth Inventory, and the California Occupational Inventory provided a basis for understanding the emotional problems of their subjects. In addition, group discussion periods were judged to have provided some therapeutic assistance. A general finding of this study was that no specific emotional or intellectual pattern is peculiar to physically handicapped adolescents. Donofrio (30) reported on the emotional adjustment of 270 orthopedically handicapped children who were residents of a hospital school. The *Brown Inventory* scores of the group fell within the range of normal emotional adjustment. Correlations between emotional adjustment and such factors as IQ, duration of handicap, and length of time in the institution, were low. Maladjustment scores tended to decrease slightly with age, and with lessened severity of handicap. Teachers' ratings of the childrens' maladjustments failed to correlate with the *Brown Inventory* findings.

Gates (43) made an intensive study of 18 orthopedically handicapped girls and boys and a group of matched controls. On 13 different measures of adjustment, which included tests of intelligence and school achievement, personality schedules, and occupational inventories, no significant differences were found between the crippled and the noncrippled. An analysis of autobiographical material elicited from the subjects suggested that family relationships were a more likely source of maladjustment than were crippling conditions. Fielding (33) investigated the attitudes and the adjustment problems of 40 young women who were orthopedically handicapped. He used standardized materials designed to measure total adjustment and reactions to frustration, and he devised special inventories which enabled him to document the degree of acceptance of the handicap. Further data were made available by a social-work evaluation of positive and negative attitudes toward disability. The results showed that all subjects possessed both positive and negative attitudes toward their disabilities; the subjects expressed dislike for associating with other handicapped individuals; altho considerable conflict was expressed in connection with marriage, unmarried subjects indicated a desire to get married; vocationally adjusted women showed a high degree of acceptance of their disabilities; and those with the most active social relationships had fewer negative attitudes toward their handicaps. The findings of this study substantiate the conclusions of Dembo, Ladieu-Leviton, and Wright (24) with respect to acceptance of loss.

Most of the studies cited above used small samples of mixed groups of orthopedically handicapped children and young adults. Typically they employed standardized tests or personality inventories, or projective devices designed to measure some aspect of personal or social adjustment. Employing small-sample statistical technics, the findings were often stated in terms of the reliability of differences between crippled and noncrippled groups in some aspect of adjustment. Just as frequently, however, the results were set forth in terms of general or clinical judgments, and there was a tendency to read a good deal of meaning into the findings. It is dif-

ficult to generalize about the adjustment problems of the orthopedically handicapped from the findings of these studies; the representativeness of the samples cannot easily be determined by the reader in many instances. Certainly, few direct relationships between orthopedic disability and behavior have been projected. The general trend of the findings indicates a slight positive relationship between disability and maladjustment, but there is frequent overlapping of distributions of test scores between crippled and normal groups. Barker and others (4) have provided a valuable comment upon methodological considerations in connection with the results of research in this area. The reader is referred to this monograph for an excellent critical analysis of these problems.

Educational Abilities and Needs of Orthopedically Handicapped

Little research has been published on the educational abilities and needs of children with orthopedic handicaps. Educational programs for these children have been developed along the lines of the best professional opinion in the field; empirical studies have contributed little to guide the administrator of special education facilities. Kirk (57) listed the areas of needed research in this field, covering problems of administration, class organization, grouping of children, and special education technics. Cain (14), and Mackie (69) set forth the special features and curriculum adjustments which are necessary for an educational program for crippled children if they are to receive full educational opportunity. These writers stressed the importance of flexibility of the school program and instruction which is individualized. Linck, Shover, and Jacobs (63) presented a comprehensive picture of the problems involved in educational planning for the crippled child. They indicated the general trends of the best practices, and they dealt specifically with a variety of administrative procedures, ranging from methods of finding crippled children to school architecture.

Sheldon (89) discussed the basic strains which an orthopedically disabled child may experience in school. She presented suggestions thru which the school routine could be modified so that the strains resulting from mechanical limitation, systematic health-drain, and social-emotional reaction to the handicap might be minimized. Kelly (55) dealt with the values which are to be derived from the use of the *Vineland Social Maturity Scale* in a day school for the orthopedically handicapped. Item failures (Vineland) were used as the basis for modifying the school program for the purpose of developing social competence of crippled children, particularly in the areas of self-help and socialization. Leventhal (60) reported on the success of multiple-grade organization for crippled children. She found that such an organization provided a rich, emotional climate in the classroom, reduced tensions in the children, and facilitated the development of social skills.

Several studies have been published which describe the educational abilities and intelligence of crippled children in school. Fouracre, Jann, and

Martorana (37) studied the educational abilities of 129 crippled children in a Buffalo day school. They reported a Binet IQ mean of 86.7, with a range of from 18 to 146. An over-all school achievement retardation of 10.1 months was found in the cases of 62 of the children who were able to take standardized tests. The children ranged in chronological age from 6 to 20 years. Twenty-nine percent of the cases were feeble-minded. Overageness was found in every grade. Hearing and vision defects were negligible; however, speech defects were noticed in about one-half the cases. The largest single group was the cerebral palsied, and within this subgroup was found the greatest proportion of children with IQ's below 70 and with speech defects. The poliomyelitis subgroup was the most retarded, educationally. These findings formed the basis for recommendations to the effect that a school program designed for mentally and educationally normal children will not meet the needs of the school-age orthopedically handicapped child.

Miller (74) reported on the intelligence and school achievement of 431 patients in a home for convalescent crippled children. Sixty percent of the children had IQ ratings of 90 or above on the *National Intelligence Test*; however, when tested with the Pintner-Cunningham, only 47 percent of the children were classified as low average or better. Duller children tended to achieve above the level of their mental ages, while but one-third of the brighter children worked up to their abilities. However, the brighter group produced the greater yearly increments of academic achievement. Donofrio (30) found his cripples to be essentially a low-average group mentally, with a mean IQ of 92.8. His cases with a history of central nervous system involvement were somewhat duller with the exception that crippling disease or type appeared to have no substantial differential effect upon intelligence. Likewise, educational achievement showed no relation to institutional stay, severity of handicap, or duration of handicap. In 113 cases the Accomplishment Quotient (mean) was 100, indicating that these children were working up to grade. From the point of view of age-grade placement, only 3 percent were underage, 66 percent were at the correct age, and 31 percent were overage. Street (91) reported on Binet test-retest results of 920 exceptional children, 188 of which were orthopedically handicapped. Changes in IQ of 10 points or more were found in but 4 percent of the cases. This relative stability suggests a high degree of reliability in individual mental-test examinations of exceptional children.

Mackie (68) gathered data on the largest number of crippled children which have been described in a single study. In response to a questionnaire, she secured information on 16,696 children who had been classified as crippled. Approximately 13 percent of her cases were cardiacs; otherwise she dealt with an orthopedically disabled group. Four types of school organization housed approximately 75 percent of the children; schools for the crippled, schools for various types of handicapped children, centers for the crippled in a regular school, and single multigrade classes. Educationally, Mackie's group was considerably retarded; the mean grade was

5.2, while the median CA was 11.6 years. The median IQ was found to fall in the low-average range. This study is carefully documented and presents a picture of the educational status of orthopedically handicapped children. The findings include data on specific educational procedures used in schools and classes, descriptions of special services which are available for these children, and information about certain aspects of personnel associated with the educational programs.

Poliomyelitis

Relatively few studies have appeared within the past few years which have been concerned with the educational and psychological adjustment of individuals with poliomyelitis. Seidenfeld has contributed three papers, two of which summarized the literature on research findings (37, 38). In a third paper (85), Seidenfeld indicated the problems which the patient with poliomyelitis may encounter. He felt that the environmental circumstances affecting the child, the child's concept of his illness, and parental and community reactions to the stages of acute illness and residual paralysis were the factors which provide the basis for study of psychological aspects of poliomyelitis.

Copellman (15) conducted a follow-up study of 100 children with poliomyelitis who were known to the New Haven Hospital Orthopedic Clinic. Over one-third of the children required treatment for their problems in connection with readjustment to home and school. Younger children were found to be timid and withdrawn, while older children tended to be aggressive. Seidenfeld (88) studied the characteristics of 110 school children who had poliomyelitis. In 56 of the cases there was no apparent residual handicap. Using a form of the *California Test of Personality*, the author compared the mean scores of his cases with those of the groups on which the test had been standardized. The results showed that the polio group was consistently better than the normative group in various areas of adjustment. An item analysis revealed a greater agreement on responses to certain items among the "no apparent disability" group than among the more severely disabled. Phillips, Berman, and Hanson (81) studied the personality and intelligence of 101 school-age children with poliomyelitis. Stanford-Binet test scores made before the subjects had contracted poliomyelitis were available for comparison with scores from the same test made in the post-poliomyelitis period. A mean loss of 1.5 IQ points was recorded for the polio group, in contrast with a mean gain of two points in a control group. This loss in IQ in the post-illness test was significant at the 2 percent level of confidence. The authors were unable to judge whether or not this slight loss in IQ was to be considered transitory. The experimental and control groups did not differ significantly on tests of personality. Harris (46) located 58 pairs of cases included in the previously cited study and studied the effect of polio on the clinical group two years after the epidemic period. Teachers' ratings of the children's

adjustment were analyzed, and the results indicated that polio had little lasting effect upon children's personality or behavior.

Lowman and Seidenfeld (65) studied the psycho-social effects of polio on a random sample of 437 cases. Patients who were employed tended to be brighter and better educated than those who were unemployed. In 98 percent of the cases physical limitation did not interfere with their work. Over 40 percent of the females and 28 percent of the males were married or were contemplating marriage. The authors felt that degree of disability did not greatly affect personal and social adjustment. Seidenfeld (86) reported on the results of interviews with 91 males and 43 females who had recovered from polio and had succeeded in gaining employment. Most of the individuals were found to be living normal lives; adequate social and vocational adjustment was the rule rather than the exception.

Cerebral Palsy

Garrett (42) recently reviewed the literature on psychological research in this field, and Perlstein and Barnett (79) considered the relationships between physical and psychological characteristics. A recent symposium (77) provided a very valuable source of reference on problems of etiological distinctions, and psychological, educational, and vocational appraisal.

Problems encountered in psychological testing and in the prediction of later developmental levels have engaged the attention of many clinicians. Bice (6), Haeussermann (45), Jewell and Wursten (52), and Strother (92, 93) pointed out the difficulties which are encountered in testing young cerebral palsied children and discussed the unreliability of test scores on young cerebral palsied children in comparison with ratings made on physically normal children. Newland (78) raised the question of the desirability of developing special tests which would be standardized on cerebral palsied populations. Taibl (94), and Tracht (95) commented favorably on the usefulness of *Raven's Progressive Matrices* for the intellectual evaluation of children with motor handicap. Holden (49) recommended a flexible use of commercially available tests, and suggested that the *Ammons Full Range Picture Vocabulary Test* and *Raven's Progressive Matrices* need further evaluation before their usefulness with the cerebral palsied can be determined. Bice (7) criticized the employment of narrow psychometric procedures in the mental evaluation of the cerebral palsied and asked for a unified approach thru combining and sharing the knowledge of various clinicians in connection with this problem.

Opinion has been divergent as to the intellectual capabilities of the cerebral palsied. McIntire (66) contributed the finding that 1 out of every 3 cerebral palsied children fall within the borderline or mental defective classifications. Until the past few years, McIntire's figures were widely accepted. More recently, several investigators have published data which

indicate a different trend. Asher and Schonell (1), Burgemeister and Blum (13), Heilman (48), Holden (50), and Miller and Rosenfeld (73) found greater numbers of children in the low IQ classifications, and the current trend in reporting indicates that perhaps two-thirds of the cerebral palsied fall within the borderline and mental defective groupings. Dunsdon's findings (32) on a large group of cerebral palsied English children of school age substantiated this newer trend toward the concept of limited educability. McIntire (66) further indicated that the incidence of inferior intelligence was greatest with the spastic subgroup. Burgemeister and Blum (13) found extreme retardation in both spastic and athetoid subgroups in their examinations of children known to the Lenox Hill Hospital Pre-School Center.

Such divergence in reporting may be explained in terms of sampling. The intake policy of schools, clinics, and treatment centers will vary from one community to another. In some instances, dull or feeble-minded children are not eligible for services. Again, it is probably true that psychologists are seeing more dull children than was the practice ten years ago. It was natural that the brighter and potentially trainable child would be presented for examination, since there were training centers which could provide for his treatment and care. A current bias in sampling might be explained on the grounds that parents of less promising children are now asking for clinical and educational services.

Dolphin and Cruickshank (26, 27, 28, 29) presented evidence to the effect that the cerebral palsied child's perceptual and conceptual processes are similar to those of the brain-injured mentally retarded without motor handicap. Largely on the basis of the studies first cited, Cruickshank and Dolphin (20) proposed a highly structured educational situation for these children. Cotton (16) found her group of spastics to be more variable, more concrete in responses, and more stereotyped in their reactions. Sarason and Sarason (84) reported that their mentally retarded cerebral palsied subjects did not appear to be a homogeneous group with respect to intellectual functioning; subjects whose *Kohs Block Design* scores were above their Binet scores showed no sign of cortical damage.

Dunsdon (32) and Wolfe (99) made intensive studies of cerebral palsied groups, and assessed the emotional stability, intellectual characteristics, and educational potentialities of their subjects. These two studies represent a major contribution to the understanding of the needs of this disability group. Bice (5) and Bice and Holden (8) reported on parental counseling technics: group guidance afforded parents an opportunity to gain insight into their relations with their cerebral palsied children.

Fouracre (38, 39, 40, 41) compiled material on realistic educational planning for children with cerebral palsy. Based upon the downward trend of intelligence found in the studies of the cerebral palsied, Fouracre and Thiel (36) presented a modified program of class organization, learning experiences, and teaching procedures designed to meet the limited functional abilities of these children. Doll and Walker (25) indicated

the relationships between knowledge of handedness and clinical diagnosis in the cerebral palsied and suggested ways of making use of information about handedness problems in the educational situation.

Some confusion in the field of cerebral palsy has developed because of the difficulties in defining a cerebral palsy universe. The disability expresses itself in restrictions in many areas—sensory, motor, perceptual, speech—and frequently involves both upper and lower extremity limitations. There has been a need in this field to provide meaningful descriptions of the extent of the disability in groups of cerebral palsied on whom studies are made. Recently, several evaluative devices have been described in the literature. Brown (11, 12), Johnson, Zuck, and Wingate (53), Jones (54), and Kelly and Harrison (56) presented promising methods of precise descriptions of physical and behavioral variables. It is to be hoped that subsequent reports of investigations in the field of cerebral palsy will contain more exact descriptions of the restrictions and limitations of the cerebral palsied subjects.

Other Crippling Conditions

The adjustment to certain orthopedic conditions less frequently encountered than poliomyelitis and cerebral palsy has been studied from time to time. Lindner (64) used two nonstandardized tests of perceptual function with two small groups of paraplegics matched on the basis of retention or loss of sexual function. His nonpotent subjects rejected sexuality in what was termed a "narcissistic withdrawal," while the sexually potent group made more sex responses in the test situation. Manson (70) measured the intelligence of 102 male paraplegic veterans who had made use of Veterans Administration advisement services. The mean IQ of this group was found to be 108.7. Altho this group was probably not representative of paraplegics in general, no evidence was found which would suggest that intellectual impairment follows paraplegic injury. Fishman (34) used self-concepts of his amputee population as a basis for predicting reaction to prothesis. Knowledge of the subject's self-evaluations made it possible for the amputee's behavior to be predicted in 44 percent of the cases. Negative attitudes toward self were found more frequently among the amputees than were positive self-evaluations. Manson and Devins (71) studied the adjustment patterns of 30 male amputees. Those with good adjustments were younger, better educated, and had satisfactory marital adjustments; the poorly adjusted group were insecure, neurotic, and made poor use of their residual resources.

Harrower and Herrmann (47) summarized the psychiatric and psychological literature on multiple sclerosis. They cited considerable clinical material which demonstrated a divergence of opinion on the question of personality structure-patterns in this handicapped group. Barker and others' concept of marginality (4) appeared to be relevant to the understanding of the multiple sclerosis patient, particularly in the initial stages of the

disease. Ripley, Bohnengel, and Milhorat (83) studied the personality factors in 67 cases of various types of muscular dystrophy. They reported that emotional changes paralleled the course of muscle deterioration. The adjustment of the patient, however, was dependent upon the personality structure prior to the onset of his illness.

Conclusion

Research in the area of orthopedic handicap has been restricted by several practical considerations. It has been difficult to secure sizable representative samples of cases with common etiology; multisource samples make it difficult to secure adequate information on early life experiences of subjects. Again, there has been an urgency to provide answers to a variety of practical problems faced by educators and therapists who work with crippled individuals. This has encouraged a good deal of speculation and has brought forth a sizable literature of clinical hunches with respect to the meaning of physical disability. Too much meaning has been read into test scores and behavior profiles without enough attention being given to finding out what such scores and ratings actually mean.

In spite of these difficulties, this review of the literature has cited many investigations which have resulted in perceptive analyses of the adjustment problems of the orthopedically handicapped. Continued research, perhaps of more major proportions, will furnish many more answers to educational and psychological problems of this handicapped group.

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¹ Corrected to December 1, 1953. Report errors immediately to the secretary-treasurer.

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